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A Challenge to British Industry

SLOWNESS in adjusting prices to changes in world markets is one of the defects ascribed to British exporters by Mr. R. A. Butler, Chancellor of the Exchequer, in the warning he gave last week against complacency as to the part played by exports from this country in maintaining the gold and dollar surplus of the sterling area. He was addressing the National Production Advisory Council on Industry. The improvement in exports since the first quarter of the year, he said, had been slow, and apart from some success in the U.S.A., exporters seemed to have been losing ground to competitors in many important areas for two years. His statement on the price factor was corroborated as it affects the locomotive export industry by Mr. Derick Heathcoat-Amory, Minister of State, Board of Trade, who told the Council that the higher prices quoted by British manufacturers were the cause of the success of German, Austrian, and Japanese firms in securing the locomotive orders for India to which we have referred in recent issues. There was, he said, a substantial difference in the prices quoted by German builders, and although Britain had lost contracts in the past through inability to quote early delivery dates, that was not the issue this time. If firms abroad can fix their prices, whereas wage claims by engineers preclude British manufacturers from doing so, it can only be hoped that the trade union leaders can be brought to see where the workers' true interest lies. Possible changes in the cost

of materials, which also are an obstacle in quoting fixed prices, are a question for the Government, producers, and workers as far as concerns factors in this country, and in matters such as the price of iron ore imports, producers of steel in Germany seem to be in no better position than British firms. How far foreign manufacturers have been helped by Government subsidies or other forms of subvention, is not yet clear, but these factors also may have had some bearing on the prices which the successful foreign builders could quote. This is particularly so as Continental true costs are believed to be above those in Britain. Subsidies in any case are unsound, and a policy of subsidising would have disastrous results in the long run. The quality of the British product at least is not challenged, and there are still many customers who are prepared to accept long delivery to secure our locomotives. The dangers inherent in a combination of long delivery plus a higher price, however, are grave.

Cost of Materials as a Factor

THE German firms concerned in the Indian orders seem either to have accepted an uneconomic price, considered a worthwhile sacrifice, to gain entry to this important market, or be receiving a substantial subsidy. This view is put forward by Mr. T. A. Crowe, Chief Managing Director, North British Locomotive Co. Ltd., in a letter to *The Times* earlier this week, in which he says that the price accepted by these firms is 25 per cent below that which they quoted for the same type of locomotive a year ago. At that time British prices were known to be about 15 per cent below German prices and, Mr. Crowe states, this differential has held good for other quotations since. He adds that the present German quotation is some 10 per cent below that put forward by British manufacturers. Estimating the weight of steel to be 100 tons per engine, we think it may be assumed that there is a difference in the cost of materials of some £1,300 between each German- and British-built engine, if, as Mr. Crowe says, the cost of steel in Germany is about £13 a ton higher than here. A subsidy would have to cover both this figure and any other differences in costs such as overheads. Labour rates in the two countries are known to be similar, but the output per man-hour in Germany is stated to be higher.

Tackling G.N.R. Problems

THE changeover of the Great Northern Railway (Ireland) to public control, as the Great Northern Railway Board, has not affected the basic problems of the undertaking. "but" said Mr. A. M. Beaton, Advertising & Publicity Superintendent of the Board, in an address given in Londonderry, "there is a strong conviction in the G.N.R. today that after the years of trial we are at last moving in the right direction." By the two Acts which brought it into existence, the Board must conduct its undertaking in a way that will result in running costs being covered by revenue. The continuance of railway services in Northern Ireland depends first on a substantial reduction being made in working costs and, secondly, on the extent to which it may be thought necessary in the public interest to maintain some services that normally can never be made to pay. The task of the Members of the G.N.R. Board cannot be properly accomplished without some fundamental changes being made in the nature and extent of G.N.R. operations. Committees have been sifting out the essential basic facts of reorganisation and planning the first steps towards integrating rail and road services.

Transport and Steel in Wales

MEMBERS of the Transportation Club were given an extremely interesting "off the record" talk on the many problems which had to be overcome in the reorganisation of the South Wales tinplate and sheet steel industries when Mr. E. H. Lever, Chairman of the Steel Company of Wales, was the principal guest and speaker at a dinner held on November 20. Mr. K. W. C. Grand, Chairman of the club, presided, and a list of those present is given elsewhere

in this issue. Mr. Lever explained how the Steel Company of Wales had spent over £100 millions on the erection of one of the largest and most modern strip mills in the world and that further extensions would probably double the initial capital expenditure. Great transport problems had been presented and overcome, and he gave warm praise to the co-operation he had received from the Great Western Railway under Sir James Milne, who was present at the dinner, and which had been continued by the Western Region under Mr. Grand. Sir Ronald Matthews proposed a vote of thanks to Mr. Lever for his most informative and often humorous talk.

Overseas Railway Traffics

MIDLAND Railway of Western Australia receipts for September were £55,696, compared with £59,145 for the corresponding month last year and with £52,541 (£54,609) for August, which with the July receipts, also a decrease on last year, give an aggregate for the first quarter of the year 1953-54 of £158,800, a drop of £5,904 on the corresponding three months of 1952-53. The reasons for this consistent decrease compared with the preceding year are not yet known. Gold Coast Railway receipts for September were £282,102, an increase of £29,502 over last year's figure, bringing the aggregate for the half-year from April 1 to £1,913,661, which compares very favourably with £1,688,763 for the first six months of 1952-53. Barsi Light Railway traffics for October were Rs. 326,500, a decrease of Rs. 125,700 against the previous year. The total from April 1 is Rs. 2,610,000, a decrease of Rs. 375,200 against the preceding year. South African Railways & Harbours railway receipts during the first half of October kept well ahead of the previous year's figures. For the week ended October 17, railway traffics totalled £2,281,460, against £1,982,406 last year, with passenger receipts £297,252 (£255,197), general goods, £1,519,522 (£1,325,128), and coal £236,944 (£201,018). Harbour receipts for that week were £129,465 (£96,744).

Pullman Car Company Report

THE net profit of the Pullman Car Co. Ltd. is shown in the company's report for the year ended September 30, 1953, to be £69,906, an increase of £6,148 over the preceding year, and it is recommended that a final dividend of 10 per cent be paid on the "A" and "B" ordinary share capital, making, with the interim dividend of 5 per cent, a total distribution of 15 per cent for the year. If this recommendation is approved the dividend for the year will be increased by 2½ per cent compared with the previous year, and the balance carried forward will be increased from £120,848 to £157,797. Gross receipts were £757,389, against £752,747 for 1951-52, and working expenses £588,510 (£577,540). These results, whilst creating a record, would nevertheless have been considerably greater but for the French railway strike at the peak of the holiday season, which caused an almost complete suspension of Continental travel. In order that the company's cars should present the best appearance and be in perfect running order for their Coronation duties it was decided to accelerate maintenance and overhauls for the year under review, with the result that the maintenance figure much exceeded that of normal years. The company was congratulated by some of the distinguished visitors to the Coronation on the presentation of the cars and on the service given by its staff.

A Hamburg-Copenhagen Direct Route

THE Grossenbrode-Gedser ferry service between Western Germany and Denmark is now established as an important international link. Since last May one international express, the "Scandinavia-Italy," which formerly ran through Jutland and over the Great Belt, a route which had become congested, now takes the new route, and there is also a train starting from Grossenbrode which affords a connection between Scandinavia, Bavaria and the Adriatic. Of the two vessels engaged on the service the German Federal Railways' handsome ship *Deutschland*

conveys up to a maximum of ten coaches and the Danish *Danmark* carries mainly wagons and motorcars. Gedser, also the terminal of a ferry across the Baltic to Warnemünde, in Eastern Germany, was already reached by a main line of the Danish State Railways. Grossenbrode, however, was served only by a branch of the former Reichsbahn, but the Lubeck-Grossenbrode section has now been brought up to main line standards, with the result that up to two hours are saved on the through journey between Hamburg and Copenhagen, and the saving is even greater between Basle and Copenhagen.

New Cut-Off Line on the Gold Coast

THE shape of the Gold Coast Railway system will be transformed when a 51-mile connection now in hand is completed. From Takoradi, the chief port, where important harbour extensions were opened earlier this year, to Accra, the capital of the colony, also on the coast, is only 110 miles in a straight line, but the railway between them is 367 miles long. It first strikes north to Kumasi, the chief town of Ashanti, then runs eastwards and southwards to Accra. The Central Province line, a branch of later construction, runs from the Takoradi-Kumasi line towards the Kumasi-Accra line but finishes some 30 miles short of the nearest point on it. An extension to fill this gap and so complete a direct route between Takoradi and Accra just under 200 miles along was approved in 1951. Aerial photography has helped the work of survey through the dense forest. Another important scheme in progress on the Gold Coast is an 18-mile line from the Accra-Kumasi railway to the planned new port of Tema, east of Accra. In addition, a 100-mile extension is being surveyed in Western Ashanti.

Multiple-Unit Diesel Trains

SOME indication of the plans for introduction of multiple-unit diesel passenger trains on British Railways, apart from projects already announced and reported in this journal for their use in West Riding and West Cumberland, was given by Government spokesmen in the House of Commons debate on transport a month ago. Mr. Lennox-Boyd, Minister of Transport & Civil Aviation, then referred to plans for multiple-unit diesel trains in East Anglia, Lincolnshire, and between Edinburgh and Glasgow. These plans doubtless have not been finalised, and any publication of details may be premature. Nevertheless dieselisation of interurban and secondary passenger services is one of those policy questions on which the British Transport Commission, under its new Chairman, General Sir Brian Robertson, should soon be able to state its intentions more fully. The pioneer work of the Great Western Railway with diesel railcars has shown some of the possibilities of this form of traction for passenger work, though the new diesel services apparently envisage faster services and considerably heavier loadings. Valuable experience is being gained with fast diesel trains by the Great Northern Railway Board in Ireland, where, however, population densities differ greatly from the districts selected for the experiments in Great Britain.

Tape-Recorded Train Announcements

TAPE-RECORDED announcements have been used for some time to overcome language difficulties in boat trains and at ports. A different reason lay behind the original decision to adopt a tape system at Stratford Station, Eastern Region, some details of which are given on another page. This was the monotony of making closely similar announcements at frequent intervals, and the adverse effect that over-familiarity might have on clarity of diction. Accompanying the use of the tape there will be the logical developments of setting the apparatus in action automatically by the passage of trains over the track circuits, and selecting two announcements in sequence as a train approaches and then comes to a stand at the platform. The system can be regarded as bringing the public announcing system into line technically with the advanced form of automatic train describing apparatus

already operating between Liverpool Street and Shenfield. There are many places, particularly those with more complex services than Stratford, where improvement in intelligibility of information for passengers is desirable. It is a question whether improvement could best be made by means of a tape, not necessarily with automatic features, or by supplementing announcements with map type indicators on which the appropriate route lights up as each train approaches the platform.

German Telecommunications School

FOR many years it was the custom of the German railways to recruit staff for the construction and maintenance of telegraph and telephone installations by engaging electrical equipment fitters from the ranks of the private industries supplying the railways and for these men to work in the ordinary telegraph maintenance shops. While well trained they had usually no special knowledge of railway equipment and to that extent had to be instructed after entering the service. Recently, however, the policy has been changed and the Federal management has now its own training centre at Aubing, Munich, to educate staff from the beginning in the theory and practice of railway telecommunications. This centre is described in an article by Herr Hans Behk in *Signal Und Draht* and is capable of dealing with 80-100 students, who take a 3½ years' course, living in a hostel nearby. The school serves the whole Bundesbahn system. The plan of instruction has been very carefully drawn up and appears to be thoroughly complete. Results so far have been most satisfactory. The final examination is taken at the local Chamber of Commerce, whose certificate of course enjoys general recognition throughout industrial circles. In addition the railway authorities issue one to successful students.

September-October Operating Results

THE four-week period from September 7 to October 4 may be regarded as a prelude to the busy eight weeks which follow and normally produce the heaviest freight train traffic of the year. The originating tonnage of 22,873,000 was 490,000 tons above the 1952 figure (2.2 per cent) and a record for this particular period since nationalisation. The forwardings of minerals and of coal and coke were also the highest for the 10th period, but loadings of merchandise and livestock were 8,000 tons below last year's level (0.2 per cent). The number of wagons loaded with merchandise and livestock was down by 15,000 (1.4 per cent). Mineral loadings were also lower by 2,000 wagons (0.6 per cent), but 22,000 more wagons carried coal and coke, an increase of 1.8 per cent. The persistent downward drift of high-rated traffic is disappointing, seeing that the September index of industrial production was well above September, 1952.

The number of loaded wagon miles was 2,782,000 higher (1.1 per cent). The Eastern Region worked 1,374,000 additional wagon miles (3 per cent) and the Western 1,298,000 (2.7 per cent). In the previous period empty wagon mileage was over 4,000,000 higher than in 1952 (4.4 per cent), but in the four weeks to October 4 the increase was restricted to 1,180,000 (1.2 per cent) and was confined to the London Midland and Western Regions. The average haul of merchandise was 128.5 miles, 2½ miles longer than a year ago; little change occurred in the distances of nearly 77 miles for minerals and slightly over 57 miles for coal and coke. Net ton-miles rose by 34,505,000 (2 per cent). The Eastern Region worked half of the additional ton-miles, increasing its traffic volume by 4.8 per cent, and the Western accounted for 12,306,000 more (3.7 per cent), the other Regions not being overburdened.

FREIGHT OPERATING STATISTICS

To deal with the additional traffic, 11,155,000 freight train miles were run, 152,000 more than in 1952 (1.4 per

cent). This extra mileage was run chiefly in the Western, Eastern and Scottish Regions. The train load of 161 tons was nearly a ton heavier, but moved a little faster at 8.82 m.p.h. The North Eastern Region set the pace by raising its speed to 11.23 m.p.h. The Scottish Region came close with a return of 10.54 m.p.h. and, despite a large traffic, the Eastern managed a slight quickening to 8.96 m.p.h. It is regrettable that the Western Region's rate of progress was slower than the all-line average, though the London Midland was far behind the rest of the system with a return of 7.67 m.p.h. The output of a train engine hour was held at last year's figure of 1,166 ton-miles through a rise of 12 points in the North Eastern Region to 1,481 and of 21 points to 1,318 in the Eastern; the three other "heavy" Regions retrograded. The North Eastern and Eastern Regions were instrumental in preventing the general average number of wagon miles run in a train engine hour from dropping more than two points below last year's result of 233, by registering 280 and 250 respectively; the Western Region slipped back to the low level of 212.

A query arises on engine hours which is no doubt being looked into. This year the proportion of "other engine hours," which represent the time spent by assisting and light engines, to train engine hours is somewhat higher than in either 1952 or 1951. That can scarcely be a profitable trend. Train engine hours in traffic increased by 16,000 (1.3 per cent) in the four weeks to October 4, the Western Region being responsible for 10,000 extra hours (4.3 per cent), while "other engine hours" rose by 13,000 (5 per cent).

RAILWAY PASSENGER TRAFFIC

In the month of August, British Railways originated 96,966,000 passenger journeys, an increase of 4,195,000 on 1952, or 4.5 per cent. The London Midland Region was exceptional in booking 146,000 fewer passengers (0.7 per cent) owing to the loss of 690,000 journeys on early morning and workmen's tickets (15.4 per cent). Travel expanded in varying degrees in the other Regions. The Southern had the large increase of 2,332,000 journeys (7.3 per cent); it originated 35 per cent of the total number of journeys and 46 per cent of the journeys made by season ticket holders. For the whole system, first-class journeys numbered 1,458,000, a decrease of 133,000 (8.3 per cent). The corresponding receipts were 4.5 per cent less.

During the four weeks to October 4, London Transport railways originated 43,009,000 journeys, a decrease of 1,031,000 (2.3 per cent). The average fare was 7.5d. and total receipts were £53,000 higher (4 per cent). Railway car miles were reduced by 398,000 (2.4 per cent).

ROAD TRANSPORT

British Road Services carried 3,261,000 tons, a decrease of 40,000 tons from 1952 (1.2 per cent) and 631,000 tons below 1951 (16.2 per cent). Vehicle miles were cut by 1,250,000 (2.2 per cent).

Road Passenger Transport recorded 189,962,000 journeys, an increase of 3,346,000 (1.8 per cent). All but 195,000 of the additional passengers were carried by the Tilling Group, which ran 243,000 more car miles. The Scottish Group cut out 30,000 car miles (0.2 per cent).

By bus, coach and trolley bus London Transport carried 280,449,000 people, a decrease of 7,304,000 (2.5 per cent). The average fare was 3.49d. and total receipts from road services were £4,078,000, an improvement of £232,000, or 6 per cent. Road car miles were curtailed by 220,000 (0.6 per cent). The total number of passenger journeys for which London Transport took responsibility by rail and road was 323,458,000, a large number, but 8,355,000, or 2.5 per cent below the 1952 figure.

INLAND WATERWAYS AND DOCKS

In period No. 10 Inland Waterways originated 31,000 more tons of traffic (3.2 per cent) and 251,000 more ton-miles were worked on its canals (1.6 per cent). These improvements were brought about by heavier movements of coal in the North Eastern Division.

There was little variation in the net register tonnage of

shipping using the Commission's docks, harbours and wharves. Inward traffic increased by roughly 5 per cent to 2,149,000 tons and outward traffic by 2 per cent to 3,394,000 tons. Landings of iron ore, oil and spirit and timber showed moderate increases. Coal shipments totalled 2,559,000 tons, an increase of 149,000 tons, but on the whole outward trade was rather slack.

New Zealand Government Railways

THE New Zealand Railways Commission was established by the Government Railways Amendment Act of 1952 and its directors were appointed on January 12, 1953. The Commission's report for the year ended March 31, 1953, which has been sent us by Mr. W. E. Hodges, Chairman, and is signed by him and by Messrs. R. Martin, C. H. Bray, A. T. Gandell, and W. L. Wyber, Members, is followed by that of Mr. H. C. Lusty, General Manager of the New Zealand Government Railways.

In his accompanying statement the Minister of Railways, Mr. W. S. Goosman, restates the Government policy as to railways, which he outlined when the Act was introduced. The railways he points out, must play the leading part for many years in the transport system of the country. Fully to achieve the provision and maintenance by the Railways Department of efficient and economical services, the Government had established the Railways Commission and delegated to it responsibility for management and administration. It considered that the cost of the provision of railway services should be borne, in general, by the user. The railways should meet operating expenses and make a reasonable contribution towards interest charges. Rates and freights were to be fixed in accordance with the principle "Long-distance transport is, with minor exceptions, the special function of the railways" and convenience alone had not to be allowed to direct to the roads the traffic falling within the proper sphere of railway operation.

The Commission's report alludes to the examination of railway finances which it undertook after taking office. Generally, it was found that costs of operating had far outstripped freight rates and fares. Since the financial year 1938-39 expenditure had increased by 197 per cent, but fares by only 45 per cent, parcels and luggage charges by 78 per cent and goods rates from 63 to 111 per cent. A new scale of freight rates and fares was fixed to operate from June 21, 1953, and is expected to yield an additional £1,000,000 in a full year of operation.

The report of the General Manager to the Commission shows that both revenue and expenditure were the highest on record. The financial result of operations was a profit of £83,272. Although revenue failed by £276,063 to reach the estimate, expenditure was £357,335 less than expected. In spite of the disruption caused by widespread floods, freight tonnage set a record of 10,025,939 tons, exceeding 10,000,000 for the first time. About £1,700,000 of the increase in goods revenue was the result of the higher tariff introduced in December, 1951.

Some of the principal results are as under:—

| | 1951-52 | 1952-53 |
|--------------------------------------|------------|---------|
| | millions | |
| Passenger journeys | 21.3 | 21.5 |
| Goods tonnage carried | 9.8 | 10.0 |
| Total train-mileage (revenue) | 12.4 | 13.4 |
| | £ millions | |
| Coaching traffic earnings | 2.8 | 3.1 |
| Goods traffic earnings | 17.0 | 19.1 |
| Total operating revenue | 20.1 | 22.6 |
| Net operating results | 1.2 | +0.084 |

As supplies of New Zealand coal were more readily available, it was not necessary to obtain stocks from overseas. A greater locomotive mileage was run with reduced coal consumption, mainly effected by the higher proportion of hard coal obtainable. The year saw the introduction of diesel-electric main line traction. By the end of it, 13 of 15 660-h.p. locomotives supplied by the English Electric Co. Ltd. were on suburban passenger working in Auckland and Wellington; their greater availability has enabled a better service to be given in spite of the shortage of locomotive staff. The first of 82 diesel-mechanical shunting locomotives on order was received. Nineteen new oil-fired "Ja"

class steam locomotives—three built at the railway shops at Dunedin and 16 supplied by the North British Locomotive Co. Ltd.—and six "EW" electric locomotives went into service. The electric locomotives are twin-unit Bo-Bo-Bo articulated machines, built by the English Electric Co. Ltd. The introduction of new wagons and a reduction in the number of wagons awaiting repair enabled less traffic to be diverted to subsidised road transport. The new stock received totalled 845 wagons.

The principal changes in passenger services were increased suburban services at Auckland, restoration of the South Island limited expresses, elimination of mixed trains, acceleration of passenger trains in the Taranaki area, and the provision of passenger accommodation on the overnight express goods trains between Christchurch and Dunedin.

New rolling stock, imported and locally built, accounted for capital expenditure of over £3,228,000. Some £820,000 was expended on the Wellington-Upper Hutt doubling and electrification scheme. A new yard was completed at Taita, the yards at Petone and Waterloo were re-arranged and £46,000 was spent on the Auckland-Frankton doubling. The average staff throughout the year numbered 25,256 (25,209 in 1952).

Bridge Investigations in Ceylon

OF the 1,150 under-bridges of 6 ft. and longer spans on the Ceylon Government Railways, there are still in service a number of wrought iron spans not yet strengthened or replaced, and hitherto some doubt has existed whether they are strong enough to carry modern traffic. Those 60 ft. in length and under are mostly plate-girder spans; longer ones are usually double-intersection Warren trusses. To ascertain to what extent these bridges could safely carry existing and contemplated heavier locomotives and whether strengthening or replacement was necessary, a series of investigations both theoretical and practical has been carried out. At the request of the Ceylon Government, the Crown Agents for the Colonies deputed Mr. Conrad Gribble to conduct them. In a paper entitled "Bridge Investigation, Ceylon Government Railways, 1949-51," presented to the Institution of Civil Engineers for discussion on November 24, Mr. Gribble outlines the calculating and bridge testing work for which he was responsible.

Although a standard loading for design approximating to 21 B.S. units had been adopted about 1910, this was considered to be much too high, and during the course of the recent investigations it was decided to substitute the equivalent of 16½ B.S. units, as this covers all types of engine now running or likely to be introduced into the colony; it was adopted for all calculations during the investigations. For the tests of 31 bridge spans of various lengths between 10 and 150 ft. the heaviest type of steam locomotive in service, the "B1" class 4-6-0 with an eight-wheel tender was used. There are, however, both in service and on order from Brush Bagnall 25 main-line diesel-electric locomotives of the A1A-A1A type with a uniform and heavier axle-load, but their lack of any hammer-blow causes comparatively light impact effect, and makes them less severe on the bridges than the "B1s"; both were considered in the author's calculations for strengthening. The spans tested were: one 150-ft., one 126-ft., three 120-ft., four 100-ft., eight 80-ft., nine 60-ft., three 40-ft., one 30-ft. and one 10-ft.

For these various tests the following instruments were used: One Fereday-Palmer stress-recorder, one Cambridge stress-recorder, two Cambridge vibrographs, two La Touche strain meters (without graphic recording), and one Egan deflectometer. With such limited testing apparatus it was possible to make only correspondingly limited research into stresses, but a fair estimate of the deflections and stresses produced by the "B1" running dead slow and at higher speeds were compared with those assessed by calculation, and the effects of hammer-blow impact, lurching, and rail joints at critical and maximum possible speeds were calculated and checked by testing. In calculating the

effects of the diesels on the spans, no allowance was made for impact. In the calculation of impact on very short spans and on floor members, hammer-blow effects were considered to be static forces with no dynamic magnification, their value being taken to be the actual forces of the out-of-balance weights at the maximum speeds attainable. Due, no doubt, to the lightness of the traffic carried, there were no traces of any record of a failure of any member of a bridge due to fatigue.

The paper describes the investigations by sections of line, and on the coast line, where speeds up to 50 m.p.h. are permissible, the tests included 60-mile tests. Maximum oscillation occurred between 30 and 40 m.p.h., but the stresses calculated to exist at those speeds were not excessive. At higher speeds, however, there was considerable horizontal oscillation due to lack in all cases of any sway bracing. On some of the inland lines 60-ft. and 80-ft. spans occur on sharp curves; one bridge tested was on a 5-ch. curve. Although speed there is restricted to 20 m.p.h. and hammer-blow is insignificant, considerable horizontal bending-moments and lateral deflections were found to be caused by lack of lateral bracing. One 80-ft. span was tested, and then bracings were fitted before re-testing. Horizontal deflection was reduced from 1.60 in. to 0.30 in., and tensile and compressive stresses in the girder flanges were reduced by about 30 and 40 per cent respectively. Rail-joints were found to have a negligible effect on spans. Effects of lurching and impact were compared with formulae prepared by the bridge Stress Committee of 1928.

The results of many of the tests are shown in the paper by graphs. Briefly, however, the results of these investigations show that few of the bridges are not strong enough to carry the engines now running, including the new diesel-electrics, and that not many renewals or strengthenings are immediately necessary. On the other hand, if steam locomotives of 16½ B.S. units are introduced, considerable expenditure will be involved, though the figure would be materially reduced if the increased motive power were diesel.

Experiment in Traction Practice

ELECTRIFICATION schemes in Great Britain might well serve as the occasion for departures from a few established practices in traction equipment design. It must be a source of surprise in some parts of the world to observe the general acceptance here of the axle-hung, nose-suspended motor, even in stock operating on services which involve continuous running at speed, such as the expresses from London to the Sussex coast and Portsmouth. These trains have not escaped criticism for their riding, and it is known that the use of fully-springborne motors has been studied. Long-standing reluctance to break away from the simplicity of the nose-suspended scheme dates from the days of flexible drives incorporating spring elements which involved lubrication problems and were liable to breakage. Disc drives and drives with links pivoting on Silentblocs justify a new assessment of the position today. At present the disc drive in the Swiss-built gas turbine locomotive of the Western Region provides the only example of a flexible transmission in main-line railway service in this country, British practice tending rather towards the use of rubber in various ways for the nose support and lateral restraint of nose-suspended motors. When the idea of fully-springborne motors is accepted, however, British industry can put forward its own solutions, as has been shown in the cardan shaft drives of the Toronto Subway cars.

With the adoption of 1,500 V. d.c. as the future standard for electrification in Great Britain, it is opportune to consider whether the conventional d.c. locomotive with resistance control can fulfil all the tasks likely to be required of it. There might be a case for inviting proposals for motor-generator locomotives where duties involving heavy haulage at low speeds are included in specification requirements. The three Southern Region locomotives of this

type have given good service, and it is simply a consequence of their sphere of operation that more emphasis has been placed on the use of flywheels to maintain tractive effort while passing over gaps in the conductor rail, than on the flexibility provided by their numerous running notches. Apart from the Southern example, the motor-generator principle has been associated mainly with a.c. schemes at low or standard frequencies, but its use on d.c. overhead systems deserves to be considered in the light of the high locomotive availability it could afford. Both the Southend line projects seem likely to call for electric locomotives to handle through goods and excursion workings, and might enable experience with motor-generator designs to be obtained which would be valuable in the future.

In locomotives with resistance control, there is scope for reducing the weight and bulk of the resistances if these were separately ventilated by their own blowers. Machines connected across the last resistance section operate automatically whenever the locomotive is running on the resistance notches, and their speed varies with the current flowing, so that maximum output from the blowers is obtained when the need for ventilation is greatest. The same effect applies if the resistances are used for braking. Where topography and traffic are less favourable for regeneration than on the Manchester-Sheffield-Wath lines, consideration could be given to rheostatic braking on the locomotives and to the design of controllers providing motoring and braking notches on one handle. Further electrification on British Railways could be made in the above ways to offer opportunities for developments in technique which would be of assistance to manufacturers in the increasingly competitive overseas market.

Developments in North Borneo

THE decreased world demand for rubber was a major factor in the fall in receipts of the North Borneo Railway last year compared with 1951. The situation was aggravated by a rise in expenditure to which heavier cost of living allowances contributed. Despite the decrease in the tonnage of rubber conveyed, that of timber, the other major commodity, increased, with a slight overall decrease in traffic, though the total was much above any other year except 1951. Permanent way maintenance improved as additional labour has become available. This and the better sleeper supply have ensured that no section of line has had to be closed, as was at one time expected. Labour still presents a problem, however, in that the majority of gangers are old men, lacking in energy yet resenting labour-saving devices. It has been impossible to attract younger men, who prefer tapping rubber, work which is better paid, demands fewer hours, and is performed under more comfortable conditions.

Despite such handicaps relaying has progressed satisfactorily. By the end of 1952 only a two-mile section and some loops on the Jesselton-Beaufort main line remained to be relaid, and rails thus released are substituted for the worst rails removed from the Gorge Section and Weston Branch, which make up the remainder of the 116-mile system. Pangalat Tunnel on the main line has been widened to give normal metre-gauge clearance and its approaches are being flattened to reduce the gradient from 1 in 62 to 1 in 100, the ruling gradient elsewhere on the main line. To facilitate branch and track maintenance and allow rubber pads to be used later if desired, two longitudinal concrete bases have been laid on the uneven rock floor of the tunnel to carry the sleepers. The rails in the tunnel are laid with closed joints to improve running and lessen upkeep.

In July, 1952, the new Papar Bridge was opened to replace that demolished in the war. It has two rehabilitated Pratt-truss spans at both ends and, in the centre, two Callender-Hamilton spans modified for skew crossing, and the mid-stream piers required more work than anticipated. Until the completion of the new bridge, traffic had crossed the river on a temporary Bailey bridge.

At Tanjong Aru, near Jesselton, where the workshops were destroyed during the war, rehabilitated Iris huts of

semi-circular design, 35 ft. wide and 17 ft. high, have been used for the boiler and erecting shop. The height has been increased to 32 ft. maximum by placing them on reinforced concrete columns, which also carry a 25-ton travelling gantry; lean-to structures increase the available width by 15 ft. a side. There is thus room for repair shops alongside the tracks in the main shed all under one roof. A new station also has been opened at Tanjong Aru.

During 1952 the locomotive shops were engaged mainly on heavy repairs and the overhaul of locomotives put into service earlier to meet pressing needs before they could be fully rehabilitated. The 52-seat railcars have been fitted

with heavier wheels to give more comfortable riding and reduce maintenance expense. Four rebuilt coaches and seven rebuilt wagons went into service; four of the wagons were steel vehicles with underframes obtained secondhand from Malaya. Although the wood fuel supply improved and stocks were built up for the first time since the war, expenditure was much above estimates as it had been expected that coal would be obtained from Lingkungan, but a report on the possibilities of this deposit was unduly delayed. The demand for low-side and flat-top wagons for service use on permanent way and bridge works placed an added strain on operating.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

Branch Line Closing

November 19

SIR,—The poster of Devil's Bridge reproduced on page 558 of your issue of November 13 is a welcome sign that that beauty spot is still accessible by rail; but I question the phrase "miniature trains" to describe the service on the Vale of Rheidol line, where the locomotives and rolling stock are robust and serviceable, and mostly built at Swindon. The expression "Festiniog Toy Railway" in vogue before the war did little to postpone that line's demise.

Could not the Vale of Rheidol poster depict the train itself in its familiar wooded surroundings, and draw attention to the fact that this is British Railways' only narrow-gauge passenger line? Or is the line's very existence a stumbling block to the standardisers and any excuse to "take a decision" good enough?

Yours faithfully,

J. G. VINCENT

Gartmore, Newton Lane, Chester

[British Railways posters are produced under the direction of publicity officers with expert knowledge of what will appeal to the public. As stated by Mr. C. J. Rider, Public Relations & Publicity Officer, Western Region, in his letter in our issue of November 13, no decision has been reached as to the future of the Vale of Rheidol line.—Ed., R.G.]

Traffic Delays

November 15

SIR,—Two recent journeys between London and Liverpool gave me the impression that enterprising footplate work is still much handicapped by bad traffic regulation. Granted that permanent way slacks on Castlethorpe troughs and through Kilsby tunnel made timekeeping difficult, the additional handicaps imposed by signalmen or control, or both, gave the enginemens no chance.

The 12.30 p.m. from Euston, with an Edge Hill driver, a Pacific, and 450 tons, was 20 min. late at Rugby and had regained 4 min. of this by Tamworth, whereupon we were checked at Hademore, an empty wagon train having been sent ahead of us to Lichfield; another effort reduced arrears to 15 min. at Milford, and then we were checked at Trent Valley Junction, through Stafford, and again at Great Bridgeford. Despite this, we were only 14½ min. late at Whitmore, but the reward was severe checks at Betley Road, Basford Wood, and Crewe South Junction. The driver persevered, and at Edge Hill had got arrears down to 13 min., there being a good chance of arriving at Liverpool Lime Street only 10 min. late, but we were held outside until the 4.10 p.m. to London had been despatched, and finished 16½ min. late. It was a similar story with the 5.25 p.m. up next day, with a Camden driver, another Pacific, and 520 tons. Despite efforts to make up time, the several signal checks, which included a halt for 2 min. at Rugby No. 7 while a freight train

was being turned into the platform road at the station, and the Kilsby and Castlethorpe p.w.s., added to them, made us 11½ min. late at Bletchley.

Both these runs exemplify one of the two main factors which aggravate the task of restoring trains to their proper paths; exceeded station allowances constitute the other. One suspects still too many instances of a time-lag in "reporting," so that the value of a perfectly good margin is nullified through ignorance of the faster train's subsequent movements. I feel that such lack of vigilance was responsible for most of the signal checks.

Yours faithfully,

J. E. L. SKELTON

9, Keble House, Manor Fields, S.W.15

[In both cases the trains were running late because of p.w.s., and in such circumstances it is not always practicable to keep the line ahead clear on the offchance that time will be regained, when other trains running punctually may be claiming the road.—Ed., R.G.]

Railway Map Posters

November 20

SIR,—The pictorial map poster of Wales reproduced in your issue of November 13 suggests to me that an interesting atlas of Great Britain could be produced by incorporating reduced reproductions of these excellent map posters for sale to the public in book form.

Yours faithfully,

J. C. ALDRIDGE

23, The Ridge, Coulsdon, Surrey

West Highland Services

November 20

SIR,—The sleeping car train between Kings Cross and Fort William should be diverted to Euston and worked over the former L.M.S. route to Rutherglen, and thence, via Glasgow Central Low Level to Dumbarton and the West Highland line. This would shorten the journey by nearly 40 miles and give a much accelerated journey, even allowing 8 hr. between London and Glasgow.

Furthermore a fast day service over this route, with stops at Stafford and Preston so as to give connections with the Midlands and South Lancashire, should prove profitable.

Yours faithfully,

EDMUND ROBINOW

Beech Lawn, Dudley Road, Whalley Range, Manchester, 16

[The service between Kings Cross and Fort William consists in the winter of a first and third class sleeping car and of a composite ordinary coach. The problem of working these round Glasgow from the former Caledonian line to join the West Highland line train from Glasgow Queen Street, which terminus is used by Kings Cross trains, is difficult. It is problematical whether traffic between West Highland stations and Preston and south thereof would justify a through day service for this long journey even in summer.—Ed., R.G.]

THE SCRAP HEAP

Whistling for It

The drivers of 5,000 Japanese National Railways locomotives were to sound their whistles for one minute last Wednesday to draw attention to their claim for a bonus.

Not Trainspotting

Londoners who like to go sightseeing by bus and coach on Sundays are establishing a new preference. London Transport statisticians, whose task it is to analyse the tastes of Sunday travel, report that watching the airliners land and leave at London Airport has become the major attraction.—From *"The Manchester Guardian."*

Two Victorias?

A correspondent suggests that after a lapse of 30 years the two stations at Victoria are apparently once more in separate hands. Over the old L.B.S.C.R. station, he states, there shines forth in green neon the legend "British Railways," while high up above the adjacent frontage of the former L.C.D.R. (later S.E.C.R.) and G.W.R. terminus, "Southern Railway" is displayed in almost as large letters. "While regular patrons will be under no illusions," he writes, "might not these conflicting signs confuse some of our Continental friends?"

Many Continental travellers may well find the familiar legend "Southern Railway" reassuring, until the sign is replaced in due course, as soon as availability of materials allows.

First Webb L.N.W.R. Locomotive Scrapped

The first engine to be designed by F. W. Webb, Chief Mechanical Engineer of the L.N.W.R., was No. 58321, depicted in the photograph reproduced below, which was recently withdrawn for scrapping by British Railways, London Midland Region. It is an 0-6-0 "coal" class goods locomotive; over 500 were built in

1873-92. They had saturated boilers with a working pressure of 150 lb. per sq. in., two inside cylinders 17 in. dia. \times 24 in. stroke and coupled wheels 4 ft. 5½ in. dia.

Guard Loses Train

Stopping at Ullesthorpe to attach two trucks of cattle the guard of a train from Rugby to Leicester was astonished to see the train leaving without him. A headlong dash was of no avail, but matters were set to rights when a message was sent down the line and the train stopped at Willey Crossing while the guard made his way there post-haste in a taxi. The train was delayed for fifteen minutes.

Watchers on the M. & G.N. Joint

There comes a time in many a boyhood when the school satchel becomes the knapsack of the engine driver and fruit cordials are rejected for a season in favour of cold tea. For most the railway is a youthful enthusiasm and the inclination to make the driving of locomotives a lifetime's occupation a transitory one, but for some the attraction lasts all their lives, even though in muted form, and all the more violent and modern wonders of cars and jets and rockets cannot make them forswear their allegiance to trains.

To one brought up on a branch line, where the arrivals were counted in hours and not in minutes, it seems that the way of the enthusiasts today is made very smooth. They have a flourishing literature, photographs, and catalogues, and even special trains run by an indulgent British Railways. It was otherwise with our joint railway in East Anglia. It had about 183 miles of track, of which 74 miles were double and the rest single; four tracks were unknown except, perhaps, in sidings. Having at first no official literature, we created our own by fieldwork, ingenious letters to the traffic manager, and little

chats with the engine drivers, later supplemented by occasional paragraphs in the railway periodical that we persuaded the school librarian possessed educative qualities every bit as high as those of *Nature* or the *Round Table*.

... Sometimes on summer evenings before "prep" we used to lie on top of a heather-covered embankment watching trains in labour on a gradient of 1 in 80, blasting as fiercely as brass bandmen, while yellowhammers sang to the accompaniment of telegraph wires and below us rabbits sunned themselves on porches of sand.

Just as there is hunting country and fishing country so, in a less exalted way, there is railway country, level pieces of track, or steep gradients where interesting performances may be expected, reached by a green lane or a walk over the fields; it was in such a no-man's-land that we knew a signalman and spent many a pleasant and unauthorised hour in his box; like many of the older railway servants he was jealous of the prowess of the company's locomotives and told tales of feats by elderly engines.

These were the last days of separate identity. Every year the local engines became fewer as they fell one by one to the breaker's hand. By the time we had to start to earn our livings not one remained and the trains were drawn by alien types lent by the parent companies.—From *"The Times."*

Passing Bell

(Complete dieselisation on Southern Railway of U.S.A. See *"The Railway Gazette"* of October 16.)

It had to come, of course;
No more the iron horse
Will roam unchallenged through the
Southern States;
The latest news relates
The dastardly dethronement of King
Coal—
God rest his gallant, old, convivial soul !

The dynasty of steam
Will soon become a dream
If such stupendous somersaults presage
An oleaginous age,
With all romantic memories, mayhap,
Expunged by simply turning on a tap.

Alas, it seems King Coal
Will soon be on the dole,
Or, at the best, exist from hand to
mouth
Way down in the deep South.
Long may the far and friendly seas
between
Save us from contemplating such a
scene !

All tides must ebb and flow,
Fortunately, and, though
T'would make my carboniferous spirit
boil
To abdicate to oil,
Such an indignity, without a doubt,
Would furnish much to make a song
about.

A. B.



"Coal" class engine withdrawn for scrapping, the first to be designed for the L.N.W.R. by F. W. Webb

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

EAST AFRICA

Exhibits at Nairobi Show

The E.A.R. & H. exhibits at the Royal Agricultural Society Show in Nairobi in October illustrated the many activities for which the Administration is responsible. This year special emphasis was given to the Engineering Department's operations.

Inside the main pavilion a permanent building, set in an attractively laid out garden, was a collection of scenic photographs, maps, statistical diagrams and models. The section devoted to the Engineering Department featured construction projects, housing and building, water supplies, track maintenance, and the organisation of the department.

Of particular interest to visitors was a scale model of the port of Kilindini, which was also exhibited at the Rhodes Centenary Exhibition, Bulawayo. Another model on display was a relief map showing the route followed by the Western Uganda Extension of the railway from Kampala to Kasese, near the borders of the Belgian Congo.

The showground is served by Kibera Station, where there was a display of specialised vehicles used by the Engineering Department including a rail grinder, a track recorder vehicle, a hopper wagon for the transport of ballast and a motor trolley of a type used for engineering inspections. The track recorder, which was invented by one of the Administration's engineers, records automatically under working conditions, differences in levels and other minor deficiencies in the line difficult to detect with the eye but nevertheless needing attention.

CANADA

Coal Rates Agreement

The Canadian Pacific Railway and Canadian National Railways have entered into an agreement to haul Western coal to Eastern Canadian points at the present freight rates for the next five years. Coal will be carried from Alberta and the Crows Nest Pass area of British Columbia to Eastern Canada at a rate ranging from \$9.10 to Nipigon, Ontario, to \$11.35 a ton to Toronto. The contract expires in April, 1959.

Altered Time Zone in East

The C.N.R. has made an alteration in time zones affecting 306 miles of line. All stations on the 106-mile line from Campbellton, N.B., to Riviere du Loup, Que., and in the 200 miles from Matapedia to Gaspé, Que., are now on Atlantic Standard Time, one hour ahead of Eastern Time.

The adoption of Atlantic Standard Time for the Campbellton division places all C.N.R. train services throughout the mainland area in the Maritimes

in one time zone. Residents of towns and villages along the routes affected have also made a time adjustment to conform with the C.N.R. action, moving clocks one hour ahead from Eastern Standard Time to Atlantic Standard Time.

Improvements in Nova Scotia

Work being carried out by the Canadian National Railways to improve passenger facilities at North Sydney, Nova Scotia, in connection with the Newfoundland services, includes a 16 ft. x 70 ft. extension to the present building to enlarge the general waiting room.

Bridge Renewal in Alberta

The Canadian National Railways have awarded a contract for the rebuilding of the substructure of the bridge across the Red Deer River, between Heatburg and Ardley, on the line between Calgary and Edmonton, Alberta.

The previous bridge, with approaches, had an overall length of 1,500 ft. and was 152 ft. from the base of the rail to the water line. It was washed out in April, 1952, when ice in the Red Deer River rose to unprecedented levels.

UNITED STATES

Diesel-Hydraulic Railcars

The latest convert to the Budd RDC-type diesel-hydraulic railcar is the Chicago, Rock Island & Pacific Railroad. Its choice is of the RDC-3 combined passenger-baggage-mail car, and two of these cars have taken over the working of the "Choctaw" (Trains 51 and 52) between Little Rock, Arkansas, and Oklahoma City. The Boston & Maine Railroad has added a similar RDC-3 to its railcar fleet, making up the B. & M. total to seven units, and the Baltimore & Ohio has three cars of the RDC-1 and two of the RDC-2 type on order.

Passenger Service Abandonments

The New York Central System is seeking permission from the Illinois Commerce Commission and the Public Service Commission of Indiana to discontinue all suburban passenger trains between Chicago and Chesterton, 41 miles distant on the main line to New York. To replace the five weekday local trains, which carry no more than an average of 625 passengers a day, certain long-distance trains would make additional stops at the more important stations along this length, such as Gary; passengers to and from other stations have the use of other forms of transport. It is calculated that the N.Y.C. has been losing an average of \$463 annually on each daily passenger by these trains, making up a total loss of over \$250,000 each year on this service.

September 30 marked the end of all passenger operation by the Pacific Electric, a subsidiary in the Los Angeles area of the Southern Pacific Railroad. The road motorcoach and the few remaining passenger rail services of the Pacific Electric have been taken over by Metropolitan Coach Lines, a subsidiary of the Western Transit Systems, Inc., with various P.E. garages, servicing shops, and other facilities. The purchase price has been about \$8,000,000. The Pacific Electric continues to operate freight traffic over 700 miles of line, using 50 per cent electric and 50 per cent diesel-electric power.

The Denver & Rio Grande Western Railroad is seeking authority from the Utah Public Utilities Commission to discontinue its very limited passenger service over the 37 miles between Salt Lake City and Ogden, on which it is losing over \$70,000 annually. There are various alternative means of transport between the two cities.

SWITZERLAND

New Suburban Coaching Stock

Two years ago the Federal Railways placed in service two experimental suburban coaches with seats adjustable according to the direction of the train.

The experience gained has been satisfactory, and the Federal Railways have ordered another six coaches of the same type, though modified in details, from the Swiss Car & Elevator Manufacturing Corporation, Schlieren (Zurich).

Externally, these new third-class coaches are similar to the usual Swiss fast train lightweight coaches, though longer by more than 3 ft. The increased length and a certain reduction in the space between the rows of seats has enabled the seating accommodation to be increased from 76 to 92.

FRANCE

Reduced Rates through Mont Cenis

Improved arrangements for the conveyance of accompanied motorcars at reduced rates through the Mont Cenis Tunnel were referred to in the August 7 and 14 issues. As the direct outcome of an international meeting held at Modane on July 1, fixed rates of flat cars have been made up to operate a shuttle service which began on October 15. Each rake includes a second-class coach for the conveyance of drivers and passengers. As the traffic develops the service interval will be reduced.

As some 20 cars can be carried on each trip the rates charged have been considerably reduced; in place of the former average charge of nearly fr.4,000 for a car and passenger, the charge is now fr.2,000 a vehicle, plus fr.95 for each passenger.

A Mechanical Method of Calculating Railway Speed-Time-Distance-Consumption Data—2*

Solution of problems involving gradient and curvature separately and in combination

By E. G. Thompson

Engineer, Electrical Engineering Branch, Victorian Government Railways

IN Part I of this article an example was given of finding time and distance from a given set of train movement conditions on level track. It will now be shown how these and other data can be found in more complex circumstances, involving also gradient and curvature.

Problem 2; Find the "Time," "Distance" and "Consumption" for a train increasing its speed by 4 m.p.h. Conditions:

Same as for Problem 1 except that there is a "Down" grade of 1 in 30. Procedure:

- (1) Place the S/T line of the sector on the average speed assumed for the movement, viz., 32 m.p.h. on (A) Scale.
- (2) Move the right-hand cursor until the intersection of the red line and the radial line of the cursor is on the "acceleration" characteristic.
- (3) Move the left-hand cursor until

target (F) is on the "current" characteristic.

- (4) Revolve the sector until the intersecting lines at G-30 are on the selected speed-increment, viz. (4).

The readings, read as before (see Fig. 9) are:—

Time: 4.2 sec.

Distance: 197 ft.

Consumption of locomotive: 1.4 kWh.

* Part I appeared in our issue of October 30

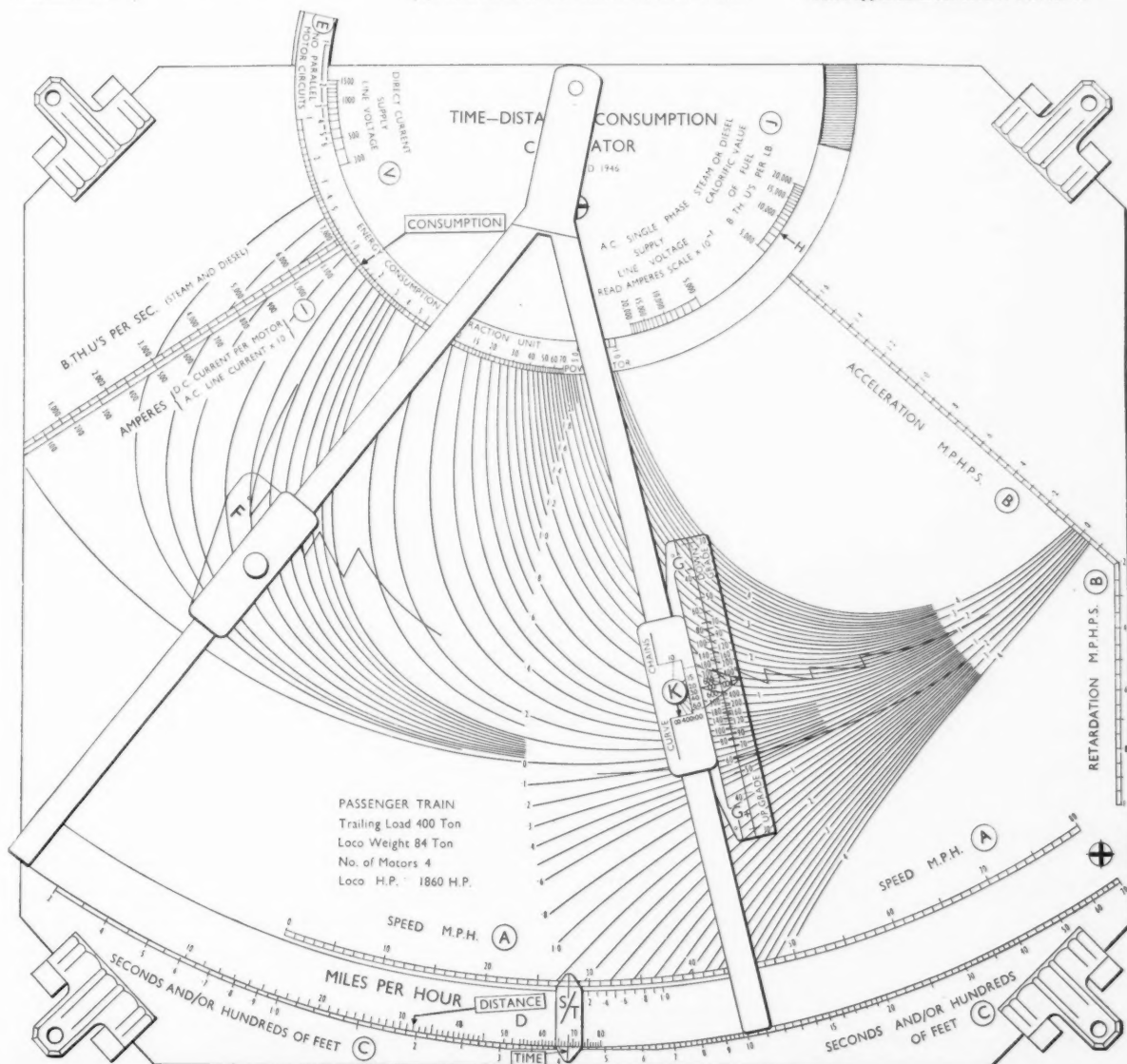


Fig. 9—Readings for Problem 2, involving time, distance, and consumption, for a train increasing its speed by 4 m.p.h.

Problem 3: Find the "Time," "Distance," and "Consumption" for a train decreasing its speed by 4 m.p.h.

Conditions:

Same as Problem 1, except that the grade is 1 in 30 "Up."

Procedure:

(1) Place the S/T line of the sector on the average speed on the (A) Scale, i.e., 32 m.p.h.

(2) Move the right-hand cursor until the intersection of the red line and the radial line of the cursor is on the acceleration characteristic.

(3) The left-hand cursor should be in position from Problem 2. If not, set it as instructed in item 3 of that problem.

(4) Revolve the sector until the intersecting lines at G+30 are on the selected speed-increment, viz. (4).

The readings, read as before (see Fig. 10), are:—

Time: 10.7 sec.

Distance: 500 ft.

Consumption of locomotive: 3.6 kWh.

Problem 4: Find the "Time," "Distance," and "Consumption."

Conditions:

Same as for Problem 3 except that there is also a 20-chain curve to be negotiated.

Procedure:

(1) Turn knob (K) on the right-hand cursor until the pointer is on the 20-chain mark.

(2) Place the S/T line of the sector on the average speed, 32 m.p.h. (A) Scale.

(3) Move the right-hand cursor until the intersection of the red line and the radial line of the cursor is on the acceleration characteristic.

(4) The left-hand cursor should be as set in Problems 2 and 3.

(5) Revolve the sector until the intersecting lines at G+30 are on the

selected speed-increment, viz. (4).

The readings, read as before (see Fig. 11), are:—

Time: 10.1 sec.

Distance: 472 ft.

Consumption of locomotive: 3.5 kWh.

The T.D.C. calculator will best be described by explaining it, step by step, in the same order as in making a full calculation, i.e., under the following headings:—Characteristics, Speed-Increment Curves, Grades, Track Curvature, Time Calculation, Distance Calculation, Consumption Calculation, and Balancing speeds.

The locomotive or vehicle characteristics have first to be dealt with, and, as with all methods of making traction calculations, these characteristics have to be prepared in the most convenient form to suit the system of calculation. For the T.D.C. instrument they are

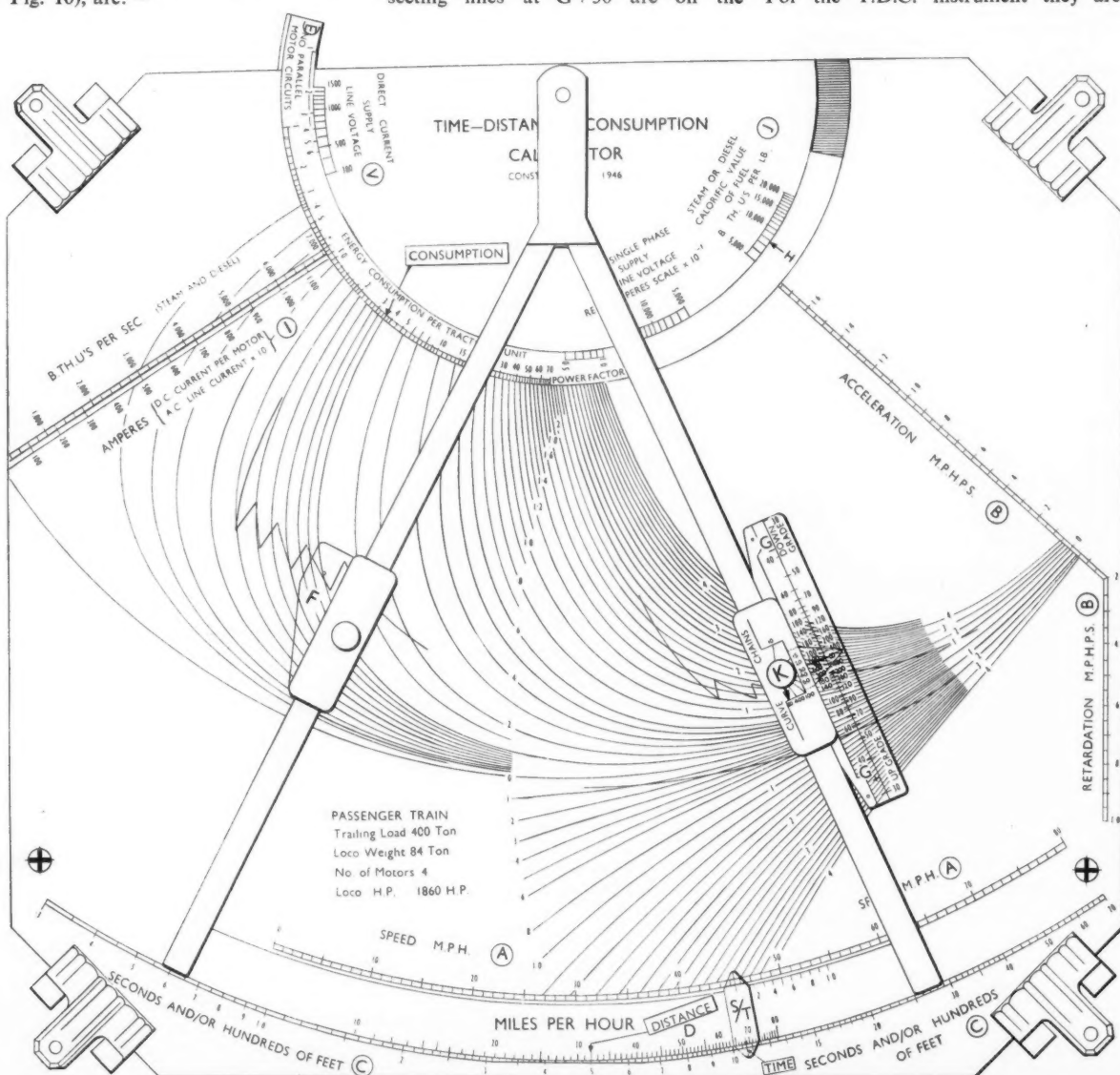


Fig. 10—Readings for Problem 3, involving time, distance, and consumption, for a train decreasing its speed by 4 m.p.h.

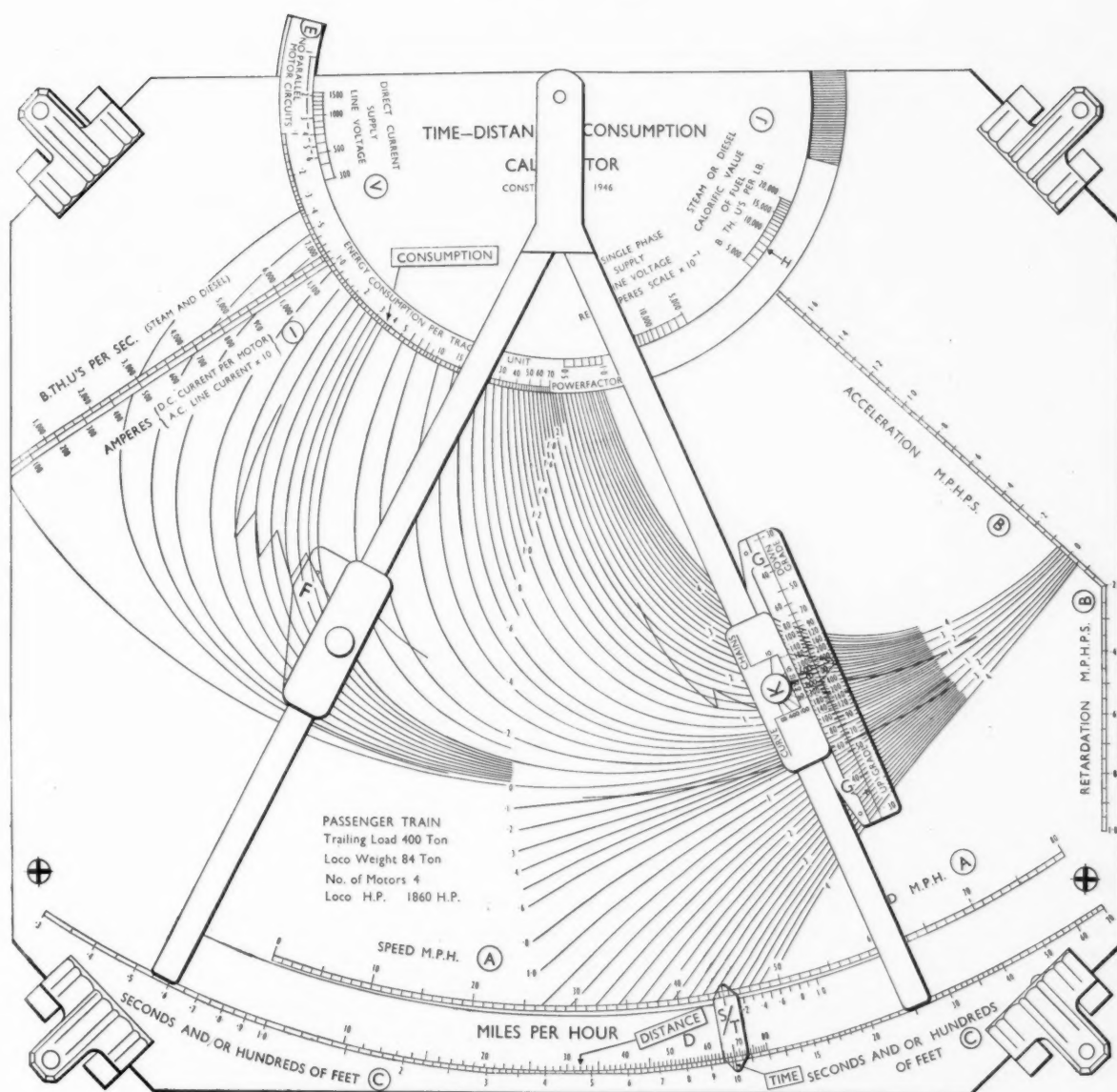


Fig. 11—Readings from the T.D.C. calculator for time, distance, and consumption, as set in Problem 4

plotted on a tracing paper which rests, in a marked position, on the baseboard.*

The characteristics in question are:—

| | | |
|-------------------------------------|--|---------------|
| For "Consumption" | | |
| Power (amp. or B.T.U. per sec.) ... | Against speed | |
| Regeneration (amp.) ... | Against speed | |
| For "Time" and "Distance" | | |
| Acceleration | Net T.E. in lb. per ton | Against speed |
| | 112 | |
| Coasting | Train resistance in lb. per ton + 10 per cent. | Against speed |
| | 112 | |
| Braking | Total retarding effort in lb. per ton | Against speed |
| | 112 | |

In the following description of the plotting of these characteristics it is

* The use of tracing paper keeps the baseboard free from temporary markings and permits the characteristic drawn on the sheet, when not required, to be removed and filed for future use. The tracing paper graphs are related to one set of conditions only, whereas the other markings, curves, and scales of the instrument are common to all traction calculations.

assumed that an electric locomotive is being employed. With electric traction, the power characteristic will be the relationship of motor current and speed, and this is plotted as below:—

Adjust the left-hand cursor until the target (F) is on a selected motor current value as indicated by scale (I). Revolve the sector until the S/T line is on the speed, scale (A), corresponding to the current chosen and in the same relationship as shown on the characteristic given by the manufacturer. Mark the position of target (F) on the tracing paper by inserting the point of a sharp pencil in the hole at the centre of the target. Repeat for other positions, and complete the characteristic curve, within suitable limits.

A similar curve could be plotted for the regenerative energy.

The acceleration relating to a particular speed is obtained by taking the tractive resistance per ton from the gross tractive effort per ton, both for the speed concerned and dividing the result by 112. This gives the acceleration for level tangent track, which is that desired for plotting. It would be possible to plot this characteristic by using the scales (A) and (B) of speed and acceleration respectively given on the baseboard, and that are visible through the tracing paper, but this would necessitate a finely and accurately calibrated acceleration scale. A better plan, it is considered, is to plot from the time and speed scales by using a speed-increment curve. The speed-increment curves will be described later.

The following formulæ give the relationships required for the proposed

method of plotting:—

$$\frac{\text{Net T.E. per ton}}{112} = \text{acceleration m.p.h.p.s.}$$

$$\text{Speed-increment} = \text{acceleration} \times \text{time}$$

Select some value of net tractive effort per ton which corresponds with a certain speed. Assume a speed increment, one mile per hour (1) for preference. The "Time" can then be calculated from the above formula for the selected speed and increment. This process is repeated until a sufficient number of plotting points are obtained.

The practical method of plotting the acceleration characteristics from the results thus obtained is then as follows:—

(1) Adjust the S/T line of the sector to the calculated value of "Time" on scale (C).

(2) Slide the right-hand cursor until the hole at ∞ is on the curve of the speed-increment used to calculate the "Time."

(3) Revolve the sector until the S/T line is on the "Speed" (scale A) which was used to calculate the "Time."

(4) Mark the tracing paper through

the hole ∞ at the centre of the cursor scale with a sharp pencil, having moved the red line out of the way by revolving knob (K).

This characteristic should be plotted accurately by taking a sufficient number of points and by joining them with a thin even line.

The coasting and braking characteristics are plotted in a similar manner.

A set of these curves are plotted on the baseboard and are suitably coloured so that the eye can easily follow any one line from end to end. The colours selected and their order for the left-hand side of the board are:—

Red, Green, Purple, Yellow, Blue, Red, Green, Purple, Yellow, Blue, and for the right-hand side of the board:—

Red, Purple, Blue, Green, Yellow.

These increment lines are normally rectangular hyperbolic curves, being based on the formula that speed-increment is equal to the product of time and acceleration,

$$V_1 - V_2 = t \times a$$

The curves as far as the instrument is

concerned are not peculiar to any one calculation, but are basic as are the time, speed, and distance scales. The user of the instrument will select the particular increment curve that best suits his immediate calculation, and from it determine the time, distance, and consumption for the movement.

The "consumption" is obtained from the product of voltage, current, and time. The voltage is taken as constant for the movement, therefore, the consumption is equal to a constant multiplied by the product of current and time.

$$\text{Consumption} = k \times I \times t$$

This, like the speed-increment curve, is a rectangular hyperbola.

It follows, therefore, that the speed-increment curves can be used for the "Time" and "Distance" calculations and also for the product of amperes and seconds to give consumption. It will be shown later how the variation of voltage of calorific value is provided in determining consumption.

(To be continued)

Bengal-Bihar Electrification

Team appointed to undertake detailed survey

THE Indian Railway Board has appointed a team of officers to prepare a detailed survey for electrification of the industrial belt in Bihar and West Bengal and Calcutta suburban sections. The survey will include the Grand Chord line from Howrah to Moghalsara, the old Bengal-Nagpur Railway main line from Howrah to Chakradharpore, all important branches in the coalfields carrying heavy coal and other mineral traffic, the whole of the suburban area on the Sealdah division, the main line of the Eastern Railway between Sitarampur and Jhajha and the proposed Calcutta circular railway recommended by the Roy Committee.

The party will also assess likely traffic trends on those sections and will be expected to recommend sections for electrification which can be justified on financial and other considerations. The project officer has been directed to try

and complete this survey within nine months and it should, therefore, be possible to reach conclusions on the aspects of these proposals by mid-1954.

Calcutta Suburban Traffic

The Eastern Railway has almost reached the limit of working its Calcutta suburban passenger traffic with steam traction over the existing lines, and electrification of the suburban section is the only alternative to constructing additional lines if the growing traffic is to be handled effectively and congestion in Calcutta is to be relieved. The cost of a project of this size will be considerable, but it is hoped that the return from electrification of the section of the railway finally recommended will be sufficient to justify it.

Electrification of the Calcutta suburban sections of the former East Indian and Bengal Assam railways has

been often considered. Early investigations revealed that electrification could not be justified on financial grounds, but the increase in other traffic during the second world war led to re-examination of the problem. After the war Messrs. Merz & McLellan, then electrical consulting engineers to the Railway Board, were instructed to prepare a report on the financial prospects of electrification from Howrah to Moghalsara via the Grand Chord, including the suburban sections of the Howrah and Sealdah divisions. The reports submitted pertained to conditions before Partition, but indicated that for moving the additional traffic expected by 1956, electrification of these sections, at the price levels then prevailing, might yield some saving in working expenses compared with steam traction, provided ample electric power was available at reasonably low rates.

CENTRAL ARGENTINE RAILWAY LIMITED: LIQUIDATION DISTRIBUTION.—The liquidators of the Central Argentine Railway Limited, in voluntary liquidation, announce that a second liquidation distribution will be made to the stockholders of the company at the following rates: 6 per cent cumulative preference stock at £3 per cent; 4½ per cent preference stock at £2 12s. per cent; consolidated ordinary stock at £1 14s. per cent; and deferred stock at £1 4s. per cent. This is in the proportions laid down in the General Scheme of Arrangement dated

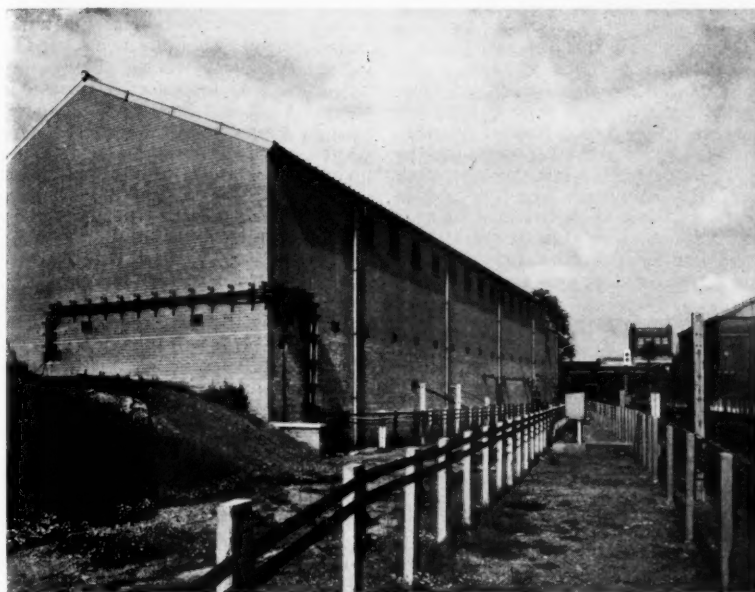
May 30, 1947. Notices will be sent to stockholders on January 25, 1954, and the date of payment will be February 23.

GOVERNMENT EXPENDITURE ON ROADS: PENAL TAXATION OF ROAD USERS.—Government road expenditure was described as "paltry" and taxation of road users as "penal" by Mr. Raymond Birch, Vice-President of the Institute of Transport, at the recent annual dinner of the East Midlands section of the Institute at Nottingham. The railways complained of restrictions on

their capital expenditure, he said, and the roads had practically nothing spent on them out of the £300,000,000 or £400,000,000 special taxation extracted from road users, and fuel for road vehicles was taxed at three times the highest rate of purchase tax on luxury goods. It was scandalous that there still should be hundreds of level crossings to hold up road traffic, and so many low underbridges with inadequate headroom for double-decker vehicles, with the result single-decker vehicles often had to be used with high operating costs.

New Traction Substation at Surrey Docks, L.T.E.

Designed to facilitate installation, maintenance, and replacement of electrical apparatus



Exterior view of substation from the railway line

THE new Surrey Docks substation of the London Transport Executive, which supplies 660 V. d.c. for the East London Line, embodies several features in its design which it is proposed to adopt in future installations of this kind on the Executive's railways. A basic objective has been the reduction in the use of oil, which is employed only in the E.H.T. circuit-breakers and lighting transformer, the main transformers having a totally-enclosed air-cooling system. The substation, which is normally unattended, and controlled from Aldgate, was opened on September 22, as reported in our September 25 issue.

Advantages of the design of building and equipment adopted include low cost of building construction and transportability of the equipment, enabling rectifiers, transformers and switchgear to be placed in position without the need of an overhead crane.

The General Electric Co. Ltd. supplied the complete rectifier equipment with its associated a.c. and d.c. switchgear, lighting transformer, auxiliary supply board, 110-V. operating battery, main and multicore cables and the station earthing installation. In addition, the G.E.C. is supplying the remote and local telecontrol panels with a 50-V. battery for supervisory and tripping supplies.

High-Voltage Switchgear

The high-voltage a.c. circuits are controlled by an 11-kV., double-busbar metalclad switchboard comprising six units, one for each of the two incoming

feeders, one for each of the feeders to the three rectifier equipments, and one for the supply to the lighting transformer. Each unit is totally enclosed by sheet steel covers and is fitted with a 400-amp. oil circuit breaker of 350 MVA. breaking capacity. The breakers are arranged for vertical isolation and are mounted, together with their closing

mechanisms, on carriages which may be completely withdrawn from the units for inspection and maintenance.

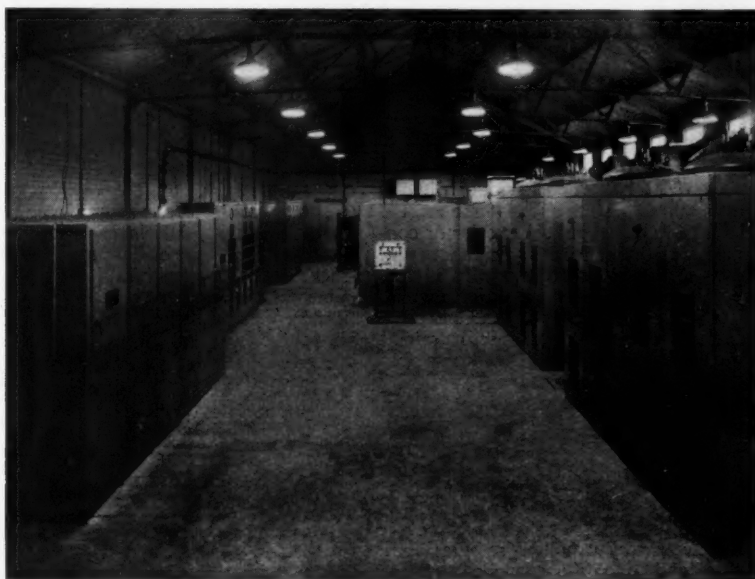
The circuit breakers are normally solenoid-operated, but facilities are provided for manual operation in case of emergency and for maintenance. In addition to standard inverse time limit overload and earth leakage protection, the rectifier circuit breakers are fitted with quick-acting overload trip coils which are set to operate instantaneously at five to six times normal full load. Neon voltage indicators are provided for the incoming feeders, thereby dispensing with potential transformers.

Mercury Arc Rectifiers

In all there are three 1,000-kW., 660-V., steel tank rectifier equipments, each comprising two 500-kW., 6-anode cylinders of the G.E.C. standard pumpless, air-cooled design, together with their transformers. The two cylinders normally operate together as a 12-phase unit but, if necessary, either one can be isolated and run as a separate unit.

The rectifiers are of the draw-out type, each cylinder being mounted on the top plate of a wheeled truck above its auxiliaries. After disconnecting a few external leads the truck may be completely withdrawn from its sheet steel cubicle so that all components are readily accessible for inspection and maintenance. The six complete truck-mounted units are interchangeable.

Each 500-kW. rectifier cylinder has its own main transformer which steps down the high voltage supply in the



General view of interior of substation, showing two of the three 1,000-kW. rectifier equipments, the a.c. and d.c. switchgear, and the auxiliary supply board

ratio 11,000/593 V. (phase to neutral). The transformers are of the air blast cooled, closed air circuit type, and each one is installed at the back of the associated rectifier unit so that the end of the transformer case forms the rear wall of the rectifier cubicle. If the end cover of the case is removed and certain internal leads are disconnected, the transformer core and windings, which are mounted on rollers, may be withdrawn from the case through the rectifier cubicle.

The cooling unit, which is mounted on top of the transformer case, is a Serck air/air heat exchanger. Hot air is drawn through the exchanger tubes by an Aerofoil single inlet fan, directly driven by a 3.5 h.p., 1,440 r.p.m. G.E.C. motor, while cold air is drawn over the

low load conditions, a load resistor is provided for each 1,000-kW. rectifier equipment. This resistor is automatically switched in by means of a main load relay and contactor as soon as the rectifier load drops below 28 amp., the combined transient load of the two transformers.

The whole of the d.c. switchgear is assembled to form two 9-panel, truck cubicle switchboards which are installed back to back with a gangway between. One board houses the positive high-speed circuit breakers and busbar selector units, while the other contains the equivalent negative switchgear. In addition, on the end of each board is mounted a small test cubicle fitted with the necessary control switches and jumper connections for testing the

circuits supplied from the 50-V. tripping battery and the 110-V. operating battery.

Operation

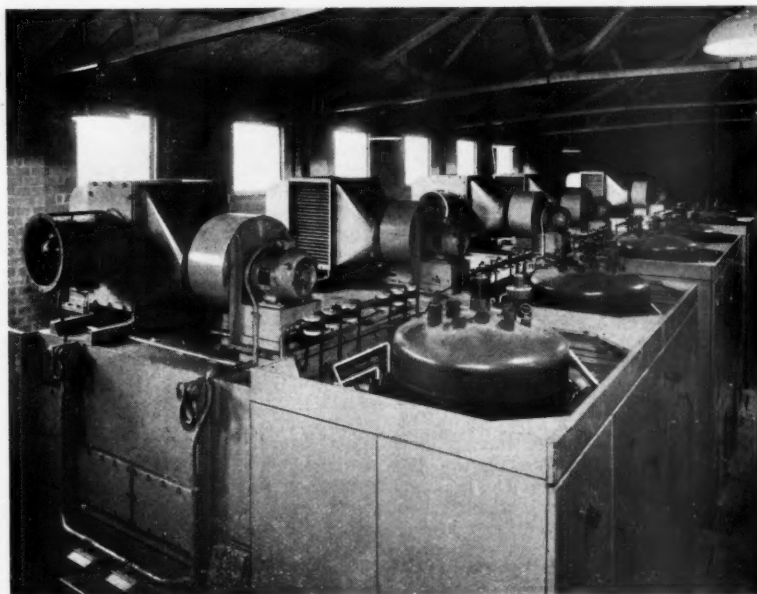
The rectifiers are started automatically by closing the associated oil circuit breakers to energise the transformers, ignition of the two cylinders in each equipment taking place simultaneously. A sequence contactor is energised via auxiliary anode load relays as soon as both cylinders have ignited, and auxiliary contactors now operate to close first the high-speed circuit breaker and then the negative contactor to connect the equipment to the d.c. busbars.

Time delay relays are provided between the auxiliary anode relays and the sequence contactors in order to ensure that the sequence contactors and d.c. circuit breakers will open only on sustained failures in auxiliary anode ignition. The track feeder and busbar selector circuit-breakers are electrically operated by means of 660-V. closing and tripping contactors. Busbar/track selector contactors are provided so that the feeder breakers can be closed when the d.c. busbars are dead.

The 11-kV. a.c. oil circuit-breakers trip automatically when their protective devices operate. Most of the relays are self-resetting, but certain lock-out features are embodied in the rectifier feeder circuits. Operation of lock-out relays is initiated by earth faults on the main transformers or isolating transformers, by failure of the transformer or rectifier fan drives, and by repeated starting sequence failure after three restarts have been attempted. The occurrence of any of these faults is indicated by a lock-out alarm on the supervisory panels at Aldgate and, locally, by a lock-out indicator, and in each instance local inspection and hand resetting of the relay are necessary.

In case of transformer fan failure, the failing motor is indicated by a flag relay at the front of the contactor box mounted on the transformer case. Forced transformer cooling may not be required during low load periods and, under these circumstances, the fans are switched off at the contactor box, the associated circuit breaker tripping circuit being automatically cut out.

The track feeder circuit-breakers trip automatically at overcurrents dependent upon the settings of calibrating resistors mounted on the high speed circuit breaker trucks. These settings are variable between 3,000 and 6,000 amp. by means of six-way stud switches. The breakers may also be tripped by operating the tunnel trip wires to de-energise the tunnel trip contactor, thus breaking the circuit to the hold-on coil. In case of emergency, the high-speed circuit-breaker can be reclosed before the tunnel trip contactor is re-energised by a latched push button on the front of the truck cubicle. All the track feeder high-speed breakers are designed to hold in at d.c. busbar voltages down to 400 V.



View across the tops of the three 1,000-kW. rectifier equipments showing the transformer cooler units

outside of the tubes by an axial type fan driven by a 0.375 h.p. motor.

The 660-V. d.c. busbars are divided into three sections interconnected through 3,000-amp. busbar selector contactors of the Salford line contact type. Each section is fed from one 1,000-kW. rectifier equipment, the positive connections being made through 3,000-amp. reverse current high-speed circuit breakers, while the negative contactors are of the line contact type. Two track feeders are taken from each of the two outer busbar sections, the positive feeders being controlled by overload high-speed circuit breakers and the negative feeders by contactors of the line contact type. In each circuit, the positive breaker and negative contactor are electrically coupled so that they close and open in sequence. Surge diverters are fitted to the outer sections of each busbar.

In order to avoid overvoltage under

high-speed breakers and the contactor when withdrawn from the board. The circuit breakers, together with their auxiliary contactors, are mounted on draw-out trucks, interlocks being provided in each case to ensure that the truck cannot be withdrawn from its cubicle until the circuit breaker has been tripped. The load resistors are mounted above the rectifier negative contactor cubicles.

The substation auxiliary supplies are controlled from a combined a.c. and d.c. switchboard fed from the 300 kVA., 11,000/415/240-V. oil-immersed lighting transformer. This board comprises four totally enclosed sheet steel cubicles, one for the 500-amp. circuit breaker controlling the supply from the transformer, one for the 415-V. feeders to the compressor motor and signal motor-generator sets, a third for the 240-volt lighting and battery trickle charger circuits and a fourth to control the

New Construction on the Gold Coast

*Shortening a circuitous main-line route
and tapping rich areas of production*

RAILWAY communication between Takoradi, the main port of the Gold Coast, and Accra, the capital, is at present via Kumasi, the capital of the Ashanti, and involves a roundabout journey of 367 miles.

The need for a short link to reduce this distance has been long felt and the Railway Administration has been pressing for the necessary funds for such a project for some time. It was obvious that such a link could be provided by connecting the Central Province Line (Huni Valley to Kade) to the main line from Accra to Kumasi. The shortest distance between these two lines for a practicable route is a 51-mile link from Achiase to Kotoku.

Authority for the work to be undertaken was included in the general Gold Coast Development Programme and approval to begin given in 1951. The

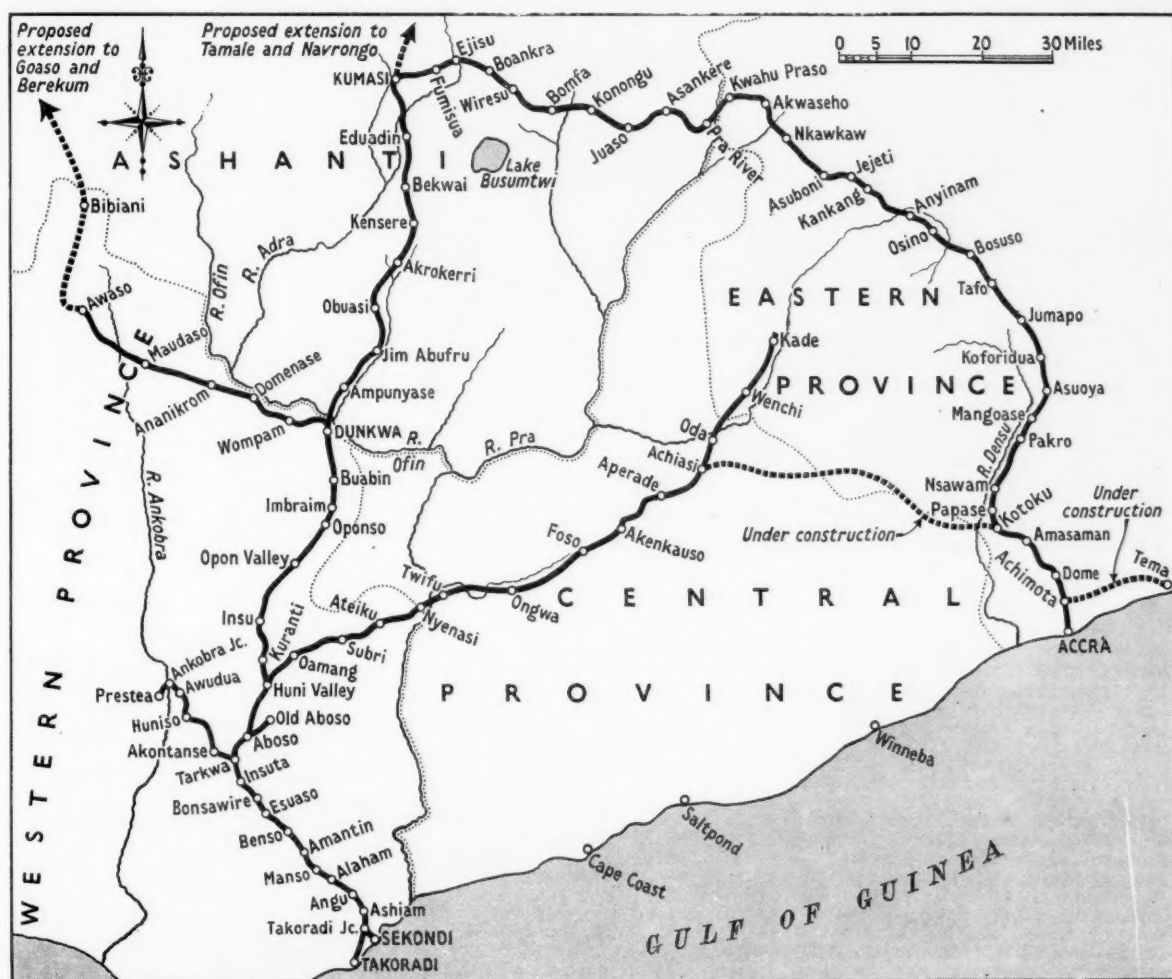
survey work and the responsibility for the supervision of the construction work was entrusted to Messrs. Rendel, Palmer & Tritton. The new line, when completed, will reduce the overall distance from Takoradi to Accra from 367 miles to 198½ miles, and will traverse some twelve miles of rich forest country, twenty of cocoa plantations and ten miles of general agricultural land. Although the primary intention of the new line is to reduce the overall distance between the main port and the capital, it is confidently expected that it will also attract new traffic by additional tonnages of timber and cocoa and provide a new and speedy passenger service between the two towns.

The dense forest over a great part of the route and the rough terrain made the survey work extremely arduous

but the use of aerial photography eased the work by providing rough information on alternative routes which could otherwise have been obtained only by cutting many miles of traces. Detailed information was unobtainable from the air photographs because of the density and the lack of uniformity of the forest canopy. It is believed that this is the first occasion on which stereoscopic examinations of pairs of air photographs have been used for route location in the Gold Coast.

Award of Contract

The contract for the construction of the line, which it is estimated will require approximately two and a half years to complete was awarded to Taylor Woodrow (West Africa) Limited in June, 1953. Earthworks have begun and heavy earthworking machinery is



The Gold Coast Railway, showing also lines under construction and proposed

on site. It will be recalled that this firm has been contractor to the Railway & Harbour Administration in connection with the execution of a £5,000,000 project for the extension of Takoradi Harbour. The main works of this contract were completed in accordance with schedule in April, 1953.

The new railway will be laid as single track to the 3 ft. 6 in. gauge with 80-lb. R.B.S. rails on local timber sleepers creosoted in the administration's own plant. The line will be ballasted mainly in gravel, known locally as mine tailings. The maximum gradient will be 1 in 100 and maximum curvature 14½ ch.

There will be seven intermediate stations, and junction stations at Achiasi and Kotoku, and a locomotive depot at Achiasi. Earthworks will be approximately 28,000 cu. yds. per mile and will be carried out by mechanical plant, including nine D.W. 20 tractors and scrapers. The operators of the plant will be Africans, many of whom have proved themselves skilled and adaptable in the handling of machinery used on the harbour extensions at Takoradi.



Achiasi - Kotoku line survey: examining air photographs through a field stereoscope supported on an open map case



Part of Takoradi Harbour, showing new wharves and sheds being built

Mr. E. J. G. de la Motte, who has been engaged on similar work in the Argentine, Bolivia, Chile and Sierra Leone and on survey work in connection with the laying of pipelines in the Middle East, has been in charge of all survey work and will be in charge of the supervision of construction work on behalf of the consultants. The contractors will be represented on the Gold Coast by Mr. J. Guthrie, who has been in charge of operations at Takoradi Harbour.

Western Ashanti Extensions

Survey work, under the direction of Mr. de la Motte, on behalf of Messrs. Rendel, Palmer & Tritton, has also been started on a 100-mile extension in the Western Ashanti. This extension, which starts from Awaso, the present terminus of the Dunkwa-Awaso branch, is to tap rich timber and cocoa-producing areas. It should give a very reasonable return for capital invested immediately construction is completed. Funds for construction have not yet been made available, but it has been considered expedient to complete survey work whilst teams are in the Gold Coast.

It is contemplated that the Western Ashanti extension will be the first section of a line to tap the undeveloped areas in the Northern Territories. Air photography has again been used to aid reconnaissance, the work being undertaken by Nigerian Survey Department planes on charter to the Gold Coast Railway.

Diesel Traction Envisaged

To improve and to speed up communication between Takoradi and Accra on the completion of the Achiasi-Kotoku link, the railway will operate express passenger trains, specially constructed as light train sets and hauled by diesel-electric locomotives, over the Takoradi-Accra direct route. The sets are being manufactured by Cravens Carriage & Wagon Co. Ltd., Sheffield, and are due for delivery during 1954. The locomotives, which are being built by the English Electric Co. Ltd., are expected to be ready for delivery between March and the end of 1954.

BRITISH RAILWAYS CLYDE SERVICES.—Three new dual-purpose vessels will come into operation on the Clyde in 1954, the first on the Gourock-Dunoon service early in January, the second at the end of March on the Fairlie-Millport-Brodick run; the third vessel is not likely to be available for service before June and will therefore be held during the summer for general relief to the other services. The vessels will carry passengers, cargo and wheeled vehicles. The spring service will operate from April 16 until May 28 inclusive. A service will operate throughout the period leaving Rothesay at 6.40 p.m. for Gourock and Craigendran. There will also be a daily service throughout the period to the Kyles of Bute (Tighnabruaich), leaving Craigendran at 2.5 p.m. and calling in each direction at Gourock, Dunoon, Innellan and

Rothesay. The Sunday sailings will be as in 1953. The Summer timetable will operate from May 29, until Thursday, September 30. Cruises will be on similar lines to the 1953 programme, including the sail round Ailsa Craig on most Saturdays.

COMMERCIAL MOTOR USERS' ASSOCIATION: ROAD TRANSPORT RESEARCH FELLOWSHIP.

—The Council of the Institute of Transport invites applications from British subjects over 30 years of age and engaged in or in connection with road transport in the United Kingdom, for the award in 1954 of the C.M.U.A. Road Transport Research Fellowship of value for exceeding £600. The purpose of the fellowship is to enable the selected person to go abroad to examine some feature of road transport therein and make a report of value to those engaged

in road transport in the United Kingdom. The period of study abroad must be not less than three months. Applications must be made on a form to be obtained from the Secretary, the Institute of Transport, 80, Portland Place, London, W.1, with whom the completed form must be deposited not later than May 31, 1954.

ROYAL JOURNEY EXHIBITION.—Nearly 150,000 persons visited the British Transport Commission "Royal Journey" exhibition, which ended its Coronation Year tour on November 22, of historic railway coaches used by royalty during the past century. After three weeks in London, the exhibition visited 13 places, concluding its tour at Wolverton (Bucks.), the carriage works of the former L.N.W.R., where some of the historic vehicles were built.

The Grossenbrode-Gedser Ferry Service

*Two-hour saving in journey time
between Germany and Copenhagen*

THE ferry service between Grossenbrode, Germany, and the Danish ferry port of Gedser was established jointly by the German Federal Railway and the Danish State Railways, mainly to relieve the Great Belt ferry whose capacity had been almost entirely absorbed, by 1950, by the general increase in railway passenger and goods traffic as well as motor traffic. Our issue of November 21, 1952, contained an account of the history and progress of the project. The ferry is an important step towards the final realisation of the long-standing plan for a direct connection between Western Europe and Scandinavia by the so-called "Birds' Flight Line" across the narrowest part of the Baltic, between the German island of Fehmarn and the Danish island of Laaland.

Because of the present financial situation of the German Federal Railway, the construction of a bridge across the Fehmarn Sound between Grossenbrode on the German mainland, and Fehmarn, and of a ferry harbour at Puttgarden on the far side of the island, had to be postponed. It was found possible to adopt a temporary solution, which does not prejudice the final solution yet permits a significant reduction in journey time between Western Germany and Copenhagen, namely a ferry service between Grossenbrode and the existing fully-equipped ferry port of Gedser.

From July, 1951, to May 16, 1953, the service was provided by one daily trip of the Danish ferry boat *Danmark* used, in addition, for one daily round-trip between Gedser and the East German port of Warnemünde. The *Danmark* has a limited capacity which has mainly been used for the conveyance of goods wagons and motorcars.

With the introduction of the summer timetable on May 17 last, the Grossenbrode service was much improved by the introduction of the new German ferry boat *Deutschland* and the completion of engineering works on the single-track line from Lübeck to Grossenbrode which have made it possible, for the first time, to work a regular ferry service of passenger coaches. In consequence, the "Scandinavia-Italy Express" which used to run via Hamburg, Fredericia and the Great Belt, has been diverted via Lüneburg, Grossenbrode, and Gedser, saving over two hours en route, with important improvements in the connections to and from Stockholm and Oslo as a result.

In addition, a new international express, the "Adria Express," has been introduced between Grossenbrode, Hamburg, Munich, Salzburg, Ljubljana and Rijeka (Fiume), connecting at Grossenbrode with a night trip of the *Deutschland* and trains to and from Copenhagen and beyond.

The Ferry Vessel "Deutschland"

As the German railways lost their four Baltic ferry boats during the war, the *Deutschland*, built by Howaldts-werke, Kiel, is the first and, so far, only post-war vessel of this type run by the Bundesbahn. Designed after consultation with the Danish State Railways, which have a unique experience of ferry boat operation, the vessel can convey a total of ten coaches 23.5 m. long or 24 laden goods wagons 10 m. long, or a corresponding number of motorcars, and has accommodation for 1,000 passengers and their luggage. The overall length is 115 m., the displacement 4,900 tons, loading capacity 1,200 tons (including 800 tons for rail-



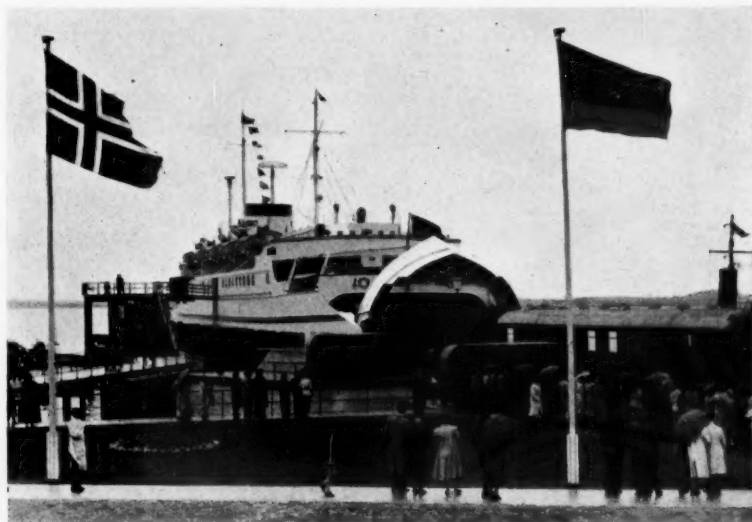
*Coaches being taken off the ferry
at Gedser, Denmark*

way coaches), cruising speed 16 knots and maximum speed 17½ knots. The two eight-cylinder M.A.N. diesel engines are 5,500 h.p. The three tracks on the car deck are interlaced at the bow where the design is governed by the existing installations at Gedser but remain separate at the stern to provide maximum stabling. The aggregate length of track available for stabling is 256 m. The two ends are protected by large, hydraulically-operated hinged gates, which are of irregular shape, adapted to that of the ship. Two capstans of 8 tons tractive effort, driven by Ward-Leonard connected motors, are fitted at each end.

Below the car deck, the ship is divided in twelve water-tight compartments, separated by hand-operated bulkheads. As the machine room occupies the mid-ship position important problems of accessibility and ventilation had to be solved. The promenade deck extends over three-quarters of the length of the car deck. Special provisions have been made for heating of passenger coaches; for those not equipped with electric heating, a special oil-fired steam boiler is available. A particularly interesting part of the equipment is the "trim and roll" gear which permits the adjustment of the weight distribution by the judicious pumping of water ballast in special tanks. The ship is fitted with high-frequency reflection sounding apparatus, Decca navigator and radar.

New Engineering Works

The first ferry berth at Grossenbrode, designed for the *Danmark* and described in our November 21, 1952, issue, has been in operation since July, 1951. For



Placing coaches aboard the "Deutschland" at Grossenbrode

the *Deutschland*, it has been necessary to construct a second, larger ferry berth and a new group of railway sidings at Grossenbrode Quay station. An important feature of the new installation is the large movable bridge which widens out towards the ferry berths to link up with the three separate tracks on the boat.

The Lübeck - Grossenbrode line, single-track, and originally privately-owned, had been taken over by the Reichsbahn in 1941. The maximum permitted speed will be raised from 60 km.p.h. to 80 or 100 km.p.h. when new works are finished. The permanent way had to be renewed over long sections to permit the working of the heavy international traffic. At Neustadt and at Lütjenbrode, new single-track avoiding lines, each nearly one mile long, have been constructed to avoid reversal. New crossing loops have been built, and existing loops extended. In connection with these works, six new bridges had to be built; five of them near Neustadt and one near Grossenbrode. The building of one near Neustadt was particularly interesting as the track was laid on a pre-stressed concrete superstructure, using a rubber sheet instead of ballast. Tracklaying was difficult because the line at that point is curved and inclined.

Traffic Improvements

The journey time from Hamburg to Copenhagen has been reduced by 1-1½ hr., compared with the journey via the Great Belt. This is about half the saving in time which will eventually be effected when the "Birds' Flight Line" is fully operative. Even so, it has been possible to achieve an even greater reduction in certain overall journey times between Scandinavia and Western Europe. For instance, it has now become possible to route the "Scandinavia-Italy Express" via Lüneburg instead of Hamburg. The German customs and

passport control takes place in the train between Lübeck and Grossenbrode. As a combined effect of all these measures, the running time of the "Scandinavia-Italy Express" between Copenhagen and Basle is reduced by three hours. It has also become possible to arrange for the

to connect with the "Adria Express" and to carry a limited number of goods wagons and motorcars. The *Danmark* continues to make one round-trip Gedser-Warnemünde and one round-trip Gedser-Grossenbrode, connecting with trains from and to Hamburg,



Train deck of the "*Deutschland*"

"Scandinavia-Italy" and the "Nord Express" (which still uses the Great Belt route) to arrive and depart at Copenhagen within a few minutes of each other thus cutting out wasteful waiting times for the Stockholm connections; this was not possible when both trains had to use the Great Belt Ferry.

The *Deutschland* is scheduled to make two round-trips a day, one to ferry the "Scandinavia-Italy Express," the other

Munich and Copenhagen, and also carrying goods wagons and motorcars. Five other international expresses ("Nordpfeil," "Nord Express," "Scandinavia-Holland Express," "Hamburg Express" and "North West Express") continue to use the Great Belt ferry. Next autumn another new ferry, Danish-built, will go into service and will enable the number of double trips daily to be increased from three to six.

PRODUCTION OF COACHES IN ARGENTINA.—Mr. R. A. Williams, Chairman of the Standard Railway Equipment Mfg. Company of Chicago, is understood to be in Buenos Aires to conclude negotiations begun last June with Acindar (Argentine Steel Industries) for setting up a carriage building works in Argentina. The plant could be in operation two years after signature of the agreement, and six months later could be working to full capacity turning out 5,000 carriages a year.

RE-SIGNALLING OF STANMORE BRANCH, LONDON TRANSPORT.—Work is to start next year on a scheme to reduce delays on the Bakerloo Line of London Transport by re-signalling the four-mile section between Wembley Park and Stanmore. At present, delays which occur, particularly in Central London, as the result of heavy crowds and other causes, cannot be overcome by retiming trains between Wembley Park and Stanmore as the signalling on this section only allows for a 3½ min. headway. The signalling, now over 20 years old, is to be replaced to permit a 2 min. headway, which will give improved regularity of running throughout the whole of the Cen-

tral Section of the Bakerloo Line. The work coincides with the provision of additional tracks to ease the bottleneck north of Wembley Park where Bakerloo trains now share tracks with Metropolitan stopping trains. Some 70 miles of wiring will be installed between Wembley Park and Stanmore in connection with the new signalling works, whose total cost will be about £78,000.

CHANGE OF HEAD OFFICE ADDRESS.—From December 1 the address of the head office of G. E. Simm (Machinery) Limited and its associate company, G. E. Simm (Engineering) Limited, will be 27, Broomgrove Road, Sheffield, 10. Telephone Nos. Sheffield 62225, 62451, and 62981.

ABOLITION OF TIMBER CONTROL.—Mr. G. B. Crow, Chairman of the Timber Development Association, has said that the Government's long-awaited decision to abolish all controls on the consumption of softwood, hardwood, plywood and veneers will be welcomed by all users of wood. For the first time since 1939, he says, timber and plywood are free to compete on level terms with other materials, and the con-

sumer has once more freedom of choice. Considerable technical advances affecting the use of timber have been made in recent years, and the Government decision now enables industry to make full use of the research and development work which has been undertaken. These developments will lead to greater efficiency, lower costs and increased productivity.

BEST KEPT STATIONS IN SCOTLAND.—Seven stations have won Special Class awards—prize money of £6 goes to each station—in the 1953 British Railways, Scottish Region, Best Kept Station Competition for cleanliness and tidiness. The stations are Bunchrew, Inverness-shire; Falkirk Grahamston, Stirlingshire; Largs, Ayrshire; Leven, Fife; Portsoy, Banffshire; Riddings Junction, near Langholm; and Stirling. This is the second occasion in a few weeks that Bunchrew has figured prominently in British Railways Competitions; the station was also successful in winning a Special Class prize in this season's Best Kept Station Gardens competition. First class prizes, each of value £5, go to 50 stations; 75 stations receive second class awards (£4); and there are 176 third class winners (£3).

RAILWAY NEWS SECTION

PERSONAL

Mr. K. W. C. Grand, Chief Regional Manager, Western Region, British Railways, has been elected Chairman of the Railway Clearing House in succession to Sir Michael Barrington-Ward.

The Secretary of State for Scotland has nominated Mr. J. M. Mitchell, C.B.E., to be a Member of the Special Panel of the Transport Tribunal in succession to Professor T. M. Knox, who has resigned following his appointment as Principal of St. Andrew's University.

Mr. H. H. Hicks, Acting General Superintendent of Motive Power & Car Equipment, Atlantic Region, Moncton, Canadian National Railways, has been confirmed in that appointment.

We regret to record the death, at the age of 32, of Chief Bode Thomas, Bologun of Oyo and formerly central Minister of Transport in the Nigerian Government.

The following is an extract from the Supplement dated November 3, 1953, to *The London Gazette* of October 30, 1953:—

The Queen has been graciously pleased to confer the award of the 1st Clasp to the Army Emergency Reserve Decoration upon the following officers:—

Major (Hon. Lt.-Colonel) R. H. Edwards, M.I.C.E. (33286) Retired.

Major R. A. Green, M.B.E., A.M.I.C.E. (62008) Retired.

Major (Hon. Lt.-Colonel) C. F. E. Harvey (41758).

Major (Hon. Colonel) S. Stevens, M.Sc. (Eng), M.I.C.E. (53993).

THE TRANSPORTATION CLUB

A dinner was held at the Transportation Club, S.W.1, on Friday, November 20. The Chairman, Mr. K. W. C. Grand, presided, and the guest of honour was Mr. E. H. Lever, chairman of the Steel Company of Wales. Members and guests who were present included:—

Messrs. L. B. Alexander, M. F. Barnard, Miles Beevor, F. L. Castle, Major H. E. Clark, Messrs. B. W. C. Cooke, H. C. Crane, Norman Crump, C. R. Dashwood, S. R. Devlin, H. W. Elliott, C. G. Hatherly, H. H. Hemming, Shirley H. James, A. W. Manser, G. Matthews, Sir Ronald Mathews, Sir James Milne, Messrs. J. R. Pike, T. W. Royle, R. A. Smeddle, Lt.-Col. K. R. N. Speir, Messrs. H. Swift, F. J. Taylor, C. C. H. Wade, S. B. Warder, H. A. A. While, H. Wilmot.

Mr. F. P. Johns has been elected a Director of Mount Lyell Mining & Railway Co. Ltd.

Mr. N. Blakstad has been appointed representative in Europe of the B.S.A. Tools Group of Companies.

Mr. Phiroze N. Talati, Deputy Controller of Stores, Southern Railway of India, who, as recorded in our October 9 issue, has been appointed Controller of Stores, was born on November 23, 1903, and educated at St. Xavier's School & College, Bombay, from where he graduated in 1926. He was appointed a Stores Probationary Officer on the Madras & Southern Mahratta Railway in April, 1927, and, in the next year he began



Mr. P. N. Talati

Appointed Controller of Stores,
Southern Railway, India

officialiating as Assistant Controller of Stores. In 1929, Mr. Talati was put on special duty to assist the then Controller of Stores, Mr. A. C. Turner, in completely revising the *Madras & Southern Mahratta Railway Stores Manual* which was published in 1930. In 1935 he visited the Far East and took the opportunity of studying stores procedure on the Japanese Railway. On his return he was placed in independent charge of the newly-formed Mechanical Stores Depot at Perambur, and was solely responsible for organisation and development of the depot at the Locomotive & Carriage Workshops. He was appointed District Controller of Stores in 1937. Soon after the outbreak of the 1939-45 war Mr. Talati volunteered for active service, and was granted an Emergency Commission in 1941 in the Corps of Indian Engineers. He attained the rank of major and commanded a transportation stores unit in Iraq, later being posted to the Transportation Directorate in Baghdad. He was recalled by the M.S.M.R.

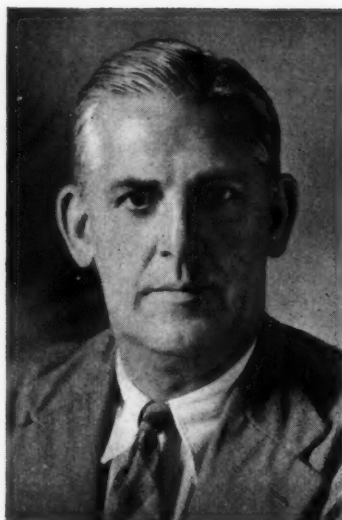
by the end of 1943, when portions of it on the East Coast were militarised. In 1945, he was confirmed as District Controller of Stores and, in October, 1948, soon after the police action in Hyderabad, Mr. Talati's services were loaned to the Ministry of State, and he was posted as Controller of Stores of the Nizam's State Railway in January, 1949, in which post he continued to November, 1951, when that system was merged into the newly-formed Central Railway. While on the Nizam's State Railway, Mr. Talati effected several changes and reorganised the department, introducing the State Railway Code procedure wherever feasible. After handing over the Secunderabad Stores Unit to the Controller of Stores, Central Railway, Bombay in March, 1952, he returned to his parent railway, now the Southern Railway, and was posted as Deputy Controller of Stores, where, jointly with the Controller of Stores, he was responsible for bringing about unification of procedure on the South Indian Madras & Southern Mahratta and Mysore State Railways which were regrouped as the Southern Railway in 1951. On the retirement of E. La V. Parisot on July 27, 1953, Mr. Talati took over as Controller of Stores, Southern Railway.

We regret to record the death on November 20, at the age of 83 of Mr. L. St. L. Pendred, C.B.E., who was closely associated with the *Engineer* for 50 years and was Editor of that journal from 1905 until 1946.

We regret to record the death on November 18, at the age of 61, of Mr. R. S. Dyball, Chairman of A. W. Chapman Limited.

Mr. M. D. Davidson has been appointed Scottish Technical Sales Representative of Smiths Industrial Instruments Limited.

We regret to record the death on November 21, at the age of 78, of Sir Lionel Warner, C.B.E., for over 20 years General Manager of the Mersey Docks & Harbour Board. Sir Lionel Warner was born on April 30, 1875, and was educated at Marlborough. He entered the service of the Great Western Railway at Abergavenny at the age of 18, later being appointed to the head office in London of the London & North Western Railway. He became Outdoor Assistant to the Superintendent of the Line in 1908, and, on February 21 of the same year, he was appointed District Traffic Superintendent, Chester. In June, 1910, Sir Lionel Warner went to Liverpool as District Goods Manager, three years later, in 1913, becoming Outdoor Goods Manager, Northern Division, with headquarters at Manchester. In 1914 he resigned from the railway service to become an assistant to Mr. Alfred Chandler, the then General Manager of the Mersey Docks & Harbour Board. Sir Lionel Warner was appointed General Manager & Secretary of that system in 1920 and held the position until 1941. He had been created C.B.E. in 1919 and was knighted in 1936.



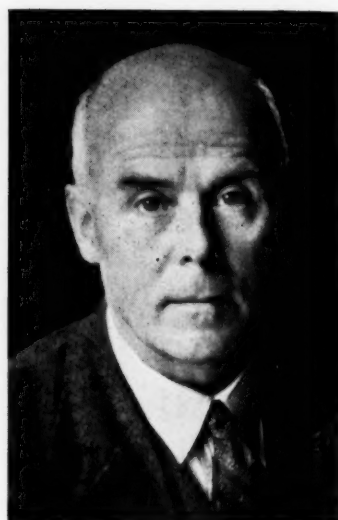
Mr. A. Johnston

Assistant Chief Engineer (Technical),
East African Railways & Harbours, 1951-54



Mr. C. Leslie Smith

Appointed General Manager, Gloucester Railway
Carriage & Wagon Co. Ltd.



Mr. G. C. Brinkworth

Director & General Manager, Gloucester Railway
Carriage & Wagon Co. Ltd., 1944-53

Mr. A. Johnston, M.I.C.E., Assistant Chief Engineer (Technical), East African Railways & Harbours, who, as recorded in our November 6 issue, has proceeded on leave pending retirement, was educated at Robert Gordon's Technical College, Aberdeen. He joined the Kenya & Uganda Railways as Assistant Engineer in 1926, and was promoted to be District Engineer in 1944, becoming Senior District Engineer in 1946. Mr. Johnston was appointed Way & Works Engineer in 1950, becoming Assistant Chief Engineer (Technical) in 1952.

The following notification appeared in the Supplement dated November 20 to *The London Gazette* of November 17, 1953, under the heading of Emergency Commissions — Corps of Royal Engineers:—

The undermentioned Lieutenant (war Substantive Major) relinquishes his commission, November 21, 1953, and is granted the honorary rank of Lt.-Colonel:—

R. M. L. Lemon (171472).

Mr. J. Howell, who is a representative of local authorities, has been appointed a member of the Transport Users Consultative Committee for Wales and Monmouthshire.

Mr. J. D. Lewis is relinquishing his partnership in the firm of Fox & Mayo to take up a Directorship with F. J. Allen Limited, the company owning the Atlas Engineering Company. This company is a supplier of engineering machinery and equipment in this country and on the continent, and has interests in India, and East and West Africa. Mr. Lewis will be mainly connected with the railway business of the company, while continuing to act in a consultative capacity to Fox & Mayo. The style of the latter company remains unaltered.

Mr. E. R. Jones, Director & Secretary of Ruston & Hornsby Limited and a Director of Ruston-Bucyrus Limited, has been appointed to the board of Davey, Paxman & Co. Ltd.

Mr. C. Leslie Smith, Director and General Works Manager of the Gloucester Railway Carriage & Wagon Co. Ltd., who, as recorded in our November 13 issue, will succeed Mr. G. C. Brinkworth as General Manager on January 1, served his apprenticeship with the company and, upon completion, left its service in 1925, returning in 1933. After holding various positions, Mr. Smith was appointed Assistant Works Manager in September 1943, becoming Works Manager in March, 1944. In May, 1948, he was appointed General Works Manager and, after the acquisition of Hatherley Works, Ltd., he was appointed a Director of that company in June, 1948. In January, 1950, the firm of William Gardner & Sons (Gloucester) Limited was taken over and Mr. Smith was appointed a Director of that company. He was also appointed a Director of the Gloucester Railway Carriage & Wagon Co. Ltd. in October of that year, while in April, 1951, he became a Director of another subsidiary company, the Gloucester Foundry Limited.

Mr. L. W. Dennis, Managing Director of Cape Asbestos (Canada) Limited, a subsidiary of the Cape Asbestos Co. Ltd. of London and South Africa, left Liverpool on the *Empress of France* on November 17 to take up his appointment in Toronto.

Mr. R. Gore, A.M.I.Mech.E., A.M.I.P.E., has been appointed Methods Engineer to Sheepbridge Engineering Limited. He will take over all problems relating to production control, material handling, factory layout and general process planning.

We regret to record the death on November 17, in his 70th year, of Mr. Donald M. Brown, Director & Commercial Manager of Keith Blackman Limited. Mr. Brown had served the company for 54 years. Cremation took place at Marylebone on November 20.

Mr. F. H. Rolt, M.I.Mech.E., formerly Superintendent of the Metrology Division of the National Physical Laboratory, has consented to act as Consultant in metrology to the Coventry Gauge & Tool Co. Ltd., Taylor, Taylor & Hobson Limited, Hilger & Watts Limited, and the Brooke Tool Manufacturing Co. Ltd.

Mr. G. C. Brinkworth, Director and General Manager of the Gloucester Railway Carriage & Wagon Co. Ltd., who, as recorded in our November 13 issue, having reached retiring age, will relinquish his appointment on December 31, is a native of Chippenham, Wiltshire. He entered the G.W.R. Locomotive Works at Swindon in 1906 as a premium apprentice under the late Mr. G. J. Churchward, and continued in railway service for approximately two years after the termination of his apprenticeship. In 1913 Mr. Brinkworth took up an appointment as Assistant to the Works Manager at the Gloucester Railway Carriage & Wagon Co. Ltd. and, on July 1, 1939, he was appointed Works Manager. In June, 1943, he was appointed Manager of the company, a year later becoming General Manager. He was made a member of the Board in 1950. On two occasions during the war, in 1941 and 1944, he had the privilege of conducting Her Majesty Queen Mary on a tour of the Works. In relinquishing his position as General Manager of the company, Mr. Brinkworth retains his seat on the board of the main subsidiaries.

Mr. J. R. Kelly will join the Board of Directors of Vickers-Armstrongs Limited on December 1, 1953, when he will assume the office of General Manager of the Crayford, Dartford and Whitehead Torpedo Works of the company.

Mr. H. McNeil, a Director and General Manager of Babcock & Wilcox Limited, has been appointed Deputy Managing Director of that company. He has been succeeded as General Manager by Mr. J. S. Robertson, Assistant General Manager.

Institution of Mechanical Engineers

The following have become Associate Members of the Institution:—Messrs. W. Ashworth, I.C.I. Limited, Engineering Services Section, J. V. Ferguson, Leyland Motors Limited, W. F. Haygreen, D. Napier & Son Limited, W. C. Ikeson, M.B.E., Mechanical Department, Iraqi State Railways, N. W. Porteous, Sudan Railways, D. D. Stephen, B.Sc. (Glas.), British Thomson-Houston Co. Ltd.

British Transport Commission Statistics (Period No. 10)

Summary of the principal statistics for the four-week period ending October 4

STAFF

| | B.T.C. Head Office | British Railways | London Transport | British Road Services | Road Passenger (Provincial) | Hotels & Catering | Ships & Marine | Inland Waterways | Docks, Harbours, Wharves | Railway Clearing House | Commer- cial Adver- tisement | Legal | Films | Total |
|------------|--------------------------|---------------------|---------------------|-----------------------------|-----------------------------------|----------------------|-------------------|---------------------|--------------------------------|------------------------------|------------------------------------|-------|-------|---------|
| Number ... | 852* | 600,062 | 95,796 | 69,107 | 61,451 | 16,162 | 6,115 | 4,708 | 20,906 | 528 | 199 | 342 | 42 | 876,270 |

* Includes headquarters staff of former Railway Executive, previously included in British Railways total

BRITISH TRANSPORT COMMISSION TRAFFIC RECEIPTS

| | Four weeks to October 4 | | Aggregate for 40 weeks | |
|---------------------------------------|----------------------------|--------|---------------------------|---------|
| | 1953 | 1952 | 1953 | 1952 |
| | £000 | £000 | £000 | £000 |
| British Railways— | | | | |
| Passengers | 8,868 | 8,539 | 91,543 | 89,016 |
| Parcels, etc., by passenger train ... | 3,102 | 2,874 | 29,312 | 27,293 |
| Merchandise | 8,503 | 8,013 | 80,325 | 79,224 |
| Minerals | 3,449 | 3,273 | 34,244 | 31,561 |
| Coal & coke | 8,726 | 8,002 | 82,250 | 76,612 |
| Livestock | 299 | 310 | 1,767 | 1,537 |
| Total British Railways | 32,947 | 31,011 | 319,441 | 305,243 |
| British Railways C. & D., etc. ... | 903 | 859 | 8,865 | 8,671 |
| British Road Services | 6,400 | 6,151 | 59,839 | 58,424 |
| Provincial & Scottish Buses | 4,238 | 4,005 | 39,396 | 37,584 |
| London Transport— | | | | |
| Railways | 1,406 | 1,368 | 13,732 | 13,632 |
| Buses & coaches | 3,339 | 3,131 | 31,237 | 30,220 |
| Trolleybuses & trams | 739 | 715 | 7,009 | 7,349 |
| Total London Transport | 5,484 | 5,214 | 51,978 | 51,201 |
| Ships | 1,049 | 1,035 | 9,489 | 9,644 |
| Inland Waterways—Carrying | 67 | 72 | 690 | 687 |
| Total passengers | 19,115 | 18,281 | 187,720 | 182,632 |
| Total freight, parcels & mails | 31,973 | 30,066 | 301,978 | 288,822 |
| Inland Waterways—Tolls, etc. | 101 | 100 | 1,038 | 1,019 |
| Docks, Harbours, etc. | 1,384 | 1,268 | 12,858 | 12,438 |
| Hotels & Catering | 1,398 | 1,338 | 13,210 | 12,643 |
| Total | 53,971 | 51,053 | 516,804 | 497,554 |

LONDON TRANSPORT

| | Passenger journeys | Inc. or dec. per cent over 1952 | Car miles | Inc. or dec. per cent over 1952 |
|------------------------|-----------------------|---------------------------------------|--------------|---------------------------------------|
| Railways | 000 | | 000 | |
| Buses & coaches | 43,009 | — 2·3 | 16,434 | — 2·4 |
| Trolleybuses | 223,594 | — 2·3 | 27,562 | — 0·6 |
| | 56,855 | — 3·4 | 5,743 | — 1·1 |
| Total | 323,458 | — 2·5 | 49,739 | — 1·2 |

INLAND WATERWAYS

Tonnage of traffic and ton-miles

| | Tonnage | Inc. or dec. per cent over 1952 | Ton miles | Inc. or dec. per cent over 1952 |
|---------------------------------------|---------|---------------------------------------|--------------|---------------------------------------|
| Coal, coke, patent fuel & peat | 000 | | 000 | |
| Liquids in bulk | 563 | + 14·8 | 7,902 | + 16·6 |
| General merchandise | 145 | — 11·2 | 4,004 | — 6·1 |
| | 293 | — 7·3 | 4,329 | — 12·3 |
| Total | 1,001 | + 3·2 | 16,235 | + 1·6 |

BRITISH RAILWAYS

Rolling Stock Position

| | Operating stock | Number under repair | Available operating stock | Available stock in 1952 |
|--------------------------|--------------------|---------------------------|---------------------------------|-------------------------------|
| Locomotives | 18,639 | 3,194 | 15,445 | 15,518 |
| Coaching vehicles | 57,153 | 5,335 | 51,818 | 52,424 |
| Freight wagons | 1,121,084 | 88,726 | 1,032,858 | 1,023,726 |

BRITISH RAILWAYS

Passenger Journeys (Month of August, 1953)

| Full fares | Excursions, cheap day, etc. | Other descriptions | Early morning and workmen | Season tickets | Total | Inc. or dec. per cent over 1952 |
|---------------|--------------------------------|-----------------------|------------------------------|-------------------|------------|---------------------------------------|
| 24,063,000 | 31,042,000 | 4,587,000 | 14,227,000 | 23,047,000 | 96,966,000 | + 4·5 |

BRITISH RAILWAYS

Freight Tonnage Originating and Estimated Ton-Miles (Period No. 10)

| | Merchandise | Minerals | Coal & coke | Livestock | Total | Inc. or dec. per cent over 1952 |
|-------------------------|-------------|----------|-------------|-----------|-----------|---------------------------------------|
| Tons originating | 000 | 000 | 000 | 000 | 000 | |
| Ton-miles | 3,857 | 4,955 | 13,950 | 111 | 22,873 | + 2·2 |
| | 538,287* | 403,962 | 855,050 | — | 1,797,299 | + 2·0 |

* Includes livestock

BRITISH RAILWAYS (Period No. 10)

| | Total steam coaching train-miles | Total electric coaching train-miles | Total freight train-miles | Freight train- miles per train engine-hour | Net ton-miles per total engine-hour | Locomotive coal consumption | |
|-------------|--|---|------------------------------|--|---|-----------------------------|------------------------|
| | | | | | | Total tons | Lb. per engine-mile |
| 1953 | 14,741,000 | 3,841,000 | 11,155,000 | 8·82 | 630 | 995,000 | 59·3 |
| 1952 | 14,558,000 | 3,795,000 | 11,003,000 | 8·81 | 623 | 1,017,000 | 61·0 |

Automatic Train Announcer at Stratford Station, Eastern Region

Installation operating through track circuits and including tape recorder linked to station loudspeaker

The Eastern Region is to install at Stratford Station an automatic announcement system, in which train announcements are automatically initiated by the trains themselves. At present all the twelve platforms are equipped with loudspeakers embodied in a normal public address system operated by two women announcers taking turns from 7 a.m. to 9 p.m.

Most trains stopping at this station are electric and have a limited number of descriptions, particularly during the peak periods when 16 trains stop at one platform in an hour. This lack of wide variation of description has tended to produce a suggestion of monotony or boredom in the announcements and has made it difficult to maintain the high standard of announcing required.

The possibility of automatic announcing was therefore investigated and the present scheme adopted. As the train draws near the station it operates the track circuit connected with the signalling system which in turn switches on a special form of tape reproducer connected to the station loudspeaker system. The loudspeakers then start announcing "The train approaching number X platform will call at . . .". As the train draws up at the platform a further signal switches the tape reproducer over to a second series of announcements "The train standing at number X platform will call at . . .".

It was found that automatic work need be applied only to platforms 8 and 10 and partially to platform 12, all down platforms. No announcing is necessary for up trains, all of which are destined for the next station which is the terminus, Liverpool Street.

The particular announcement required will be pre-selected by push-button control—the panel to provide for 24 announcements, six spare—ten in respect of platform 8 and for a maximum of 14 for platforms 10 and 12. These two sizes coincide with the standard sizes of recording equipment and no economy would be effected by any reduction.

Selection of Announcements

The push-button equipment will permit up to four announcements to be selected and stored for each platform group, the announcements will then be broadcast in sequence as each train approaches and arrives at the station. The push buttons can be operated at any time but preferably not later than the time the train enters the first section. The buttons associated with the appropriate announcements will have to be operated in the correct sequence and a small illuminated panel will display the distinguishing number of the announcement selected and stored.

The first train to enter the controlling section will start the broadcasting and a red light will be illuminated over the associated announcement number in the small panel referred to above to indicate that the announcement is proceeding. This red lamp and the illuminated number will be extinguished when the train leaves the platform and the next train will operate the next announcement in a similar manner. Further buttons can be operated as required as the stored, selected announcements are cleared by each train.

If a non-stop or freight train, for which

no announcement is required, is routed over the section concerned, it will be necessary to operate a "no announcement" button in a similar manner to the others.

There will be a reset key for each platform group, which will enable the operator to cancel selected announcements for that group in the event of unforeseen change or misoperation. The operation of the reset key will also terminate any announcement that may be in progress. The provision of a key to cancel the last selected announcement only of several selections has been considered uneconomic and therefore unjustified.

The announcements for platforms 8 and 10 will consist of two portions "The train approaching . . ." and "The train standing in . . .". The first portion will be broadcast when the train is at a suitable distance from the platform. If the appropriate button is not pushed until the train is too near to the platform to allow time for the broadcast to be completed, the second portion only will be broadcast whilst the train is at the platform.

There will only be one announcement for trains using platform 12—"The train now standing in platform 12 . . ."—but no

suitable track circuit conditions are available to provide automatic control of the announcements. The announcements will therefore be broadcast immediately the appropriate button is operated or—if a train controlled announcement is being broadcast—immediately such a broadcast is completed. There can be simultaneous broadcasting on both platform groups.

The selecting and storage relay equipment will be fitted in the signalbox apparatus room and the recorder and amplifier equipment in the present announcer's room.

The operator in the signalbox will be the timekeeper, who will also make emergency announcements by manual means. A microphone will be provided in the signalbox, with associated switching keys for this purpose and for announcing on all the up platforms. A loudspeaker and switch will be provided in the signalbox to monitor all automatic announcements when required.

The new system has been designed to meet the requirements of the Eastern Region Operating Department by the Signal & Telecommunications Department which will provide and install the selecting and storage relay equipment and push-button panel. A contract has been awarded to the General Electric Co. Ltd. for supply and installation of the tape recording and amplifying equipment. A special feature which the company has developed is a 3-in.-wide tape carrying recorded announcements in up to 25 parallel tracks.

Mixed-Gauge Track Device in South Australia

Fixed frog switch from three- to four-rail track

The mixed-gauge track of the South Australian Railways between Wolsley and Mount Gambier, used by rolling stock of both 5-ft. 3-in. and 3-ft. 6-in. gauges, consists of three rails, one of which is common to trains of both gauges.

On turntables and ashpits used by both broad- and narrow-gauge locomotives, however, there are four rails, the outer

ones for 5-ft. 3-in. gauge and the two inner for 3-ft. 6-in. gauge use. This maintains correct balance when on the turntable.

The direction of narrow-gauge engines from three- to four-rail track is not effected by moveable points, as would be the case when a train is switched on to a siding, but by means of a fixed frog assisted by an opposite guide rail. Both of these act-



Fixed frog at Mount Gambier, South Australian Railways, for switching locomotives to four-rail gauntlet track over ashpit

ing on the flanges of the locomotive wheels divert it from the common rail, to which the frog is fixed, on to a fourth or inner rail. The frog, as it were, divides the common rail in two. Thus for a short distance the common rail ceases to be used by trains of both gauges and is used for broad gauge wheels only.

After passing over the turntable or pit engines can move forward and again resume running on three-rail track, being re-directed by the guide rail and fixed frog.

Swiss Signalling Development

At a meeting of the Institution of Railway Signal Engineers on October 21, with Mr. T. Austin, the President, in the chair, a paper was read by Dr. Karl Oehler, Chief Technical Director, Integra A.G., Wallisellen, Zurich, on signalling developments on the Swiss Railways.

The introduction of colour-light signals, having the same meaning as the mechanical signals; speed restrictions; indications for high-speed junctions, and the need for improved signals to cater for higher speeds were discussed by Dr. Oehler. The paper also covered curvature and gradients of tracks, a novel signal control circuit over two wires; the development of interlocking installations; improved type of relays having up to 17 contacts; method of block working; signalling installations in the Gotthard Tunnel; and the adoption of the Metrum system of automatic train control. The reading of the paper was accompanied by the showing of lantern slides, explained in detail by Dr. Oehler, and a demonstration of different types of signals, the models having been made by Mr. Codd of Tyer & Company, Limited.

Mr. T. S. Lascelles emphasised that the Swiss were in the front rank of engineering and that it was not surprising to hear that in railway signalling also they were not behindhand. There was much to admire in the installations which had been shown on the lantern slides, and they congratulated Dr. Oehler and his railway colleagues.

Great skill had been shown in adapting the latest ideas to the peculiar conditions in Switzerland where, for example, winter conditions made it difficult to operate mechanical signalling, and the bold step had been taken of installing power signalling at even the smallest country stations. The adoption of independent shunting signals was a noticeable step forward.

Axle Counting

Mr. Lascelles expressed his interest in axle-counting, and asked whether the Zaugg axle-counter in the Hauenstein Tunnel was still in use, or whether it had been superseded by more modern apparatus.

Dr. Oehler stated that the Zaugg axle-counter had been replaced by the system described in the paper. It had not been easy to develop an axle-counter which was really reliable in use with high-speed trains.

A vote of thanks to Dr. Oehler was moved by the President and carried with acclamation.

INSTITUTE OF TRANSPORT.—The Institute of Transport Henry Spurrier Memorial Lecture will be given at the Jarvis Hall (R.I.B.A.), 66, Portland Place, London, W.1, at 5.45 for 6.15 p.m. on Monday, December 14, when a paper will be read on "Road Transport and the manufacturer."

Guy One-Man Operated Bus

Twenty-six seater, single-deck design for London Transport

London Transport has taken delivery of the first of the GS-type one-man operated 26-seater single-deck buses which are to replace the 18-year-old Leyland "Cubs." To keep construction costs down, standard production units and parts have, as far as practicable, been incorporated. The bus is the result of close co-operation between London Transport design staff, Guy Motors, and Eastern Coachworks.

Overall dimensions are as follows:—

| | |
|------------|--------------|
| Length ... | 25 ft. 0 in. |
| Width ... | 7 ft. 6 in. |
| Height ... | 9 ft. 6 in. |

The chassis is basically a Guy "Vixen" of 15-ft. wheelbase. A Perkins P.6 engine in unit with a Borg & Beck 11-in. clutch and a Guy four-speed clash-type gearbox drives a spiral bevel rear axle of 5.7 to 1 ratio. The two leading shoe Girling brakes are applied by the Lockheed Hydrovac system, for which an engine-driven rotary vane exhauster is provided. The 18-gallon fuel tank, mounted on the nearside of the chassis, has a standard L.T.E. quick-release filler cap. The 24-V. battery is at the extreme rear of the frame and readily accessible.

Body Structure

The body structure is of the usual Eastern Coachworks all-metal light alloy construction, embodying the ECW hollow-tube pillar and Chobert riveting. Interior styling follows current L.T.E. practice. Seating is of standard RT and RF type and colouring, with the latest form of revised trimming with piping eliminated to assist maintenance; the usual L.T.E. cork tiling and longitudinal hardwood slats are used. Interior lighting is of the RF type, with invisible fixings. Standard ECW windows, with six sliding ventilators, are mounted in Fastflex glazing.

The whole front assembly, of balanced alligator bonnet, side panels, wings, engine rear cowl, etc., is mounted on the body, the only point of contact with the chassis being through flexible rubber mountings. All vulnerable items are readily replaceable.

The external appearance of the body follows usual London Transport Country Area practice, being finished in green livrey lined in cream.

Driver's Seat

The one-man arrangements include a standard RT fully-adjustable driving seat, a folding "jack-knife" door, controlled by the driver by means of C.A.V. electrical equipment, and a partition to the nearside of the driver which both protects the change-speed lever from the public and carries a track for the Gibson ticket-issuing machine to enable this to be pulled towards the driver for use and subsequently pushed out of the way or locked in a housing when the driver leaves the bus.

Behind the driver is a full partition carrying the usual concertina anti-glare blind. The top half of the driver's windscreen has the same opening arrangement by chain as the RT and the nearside windscreen is designed to be an emergency push-out window. The signalling window is assisted by plungers to give rapid action.

De-misting and cab heating are by a four-outlet Key Leathers unit fitted into the nearside of the dash, from which it draws in fresh air through exterior louvres. Warmed fresh air is distributed through two nozzles below the offside screen, one below the nearside screen and another by the driver's feet. Each screen has standard C.A.V. rack-driven wipers with remotely-situated motors.

Standard RF destination boxes are installed, the front one accessible from inside. The faretable is mounted on the double-skin detachable cowl over the rear of the engine. The usual ECW emergency rear door, centrally located, has pull-out handles inside and outside. Below it is a detachable panel for battery replacement.

The lighting equipment incorporates standard RF items throughout, with the addition of a second rear-lamp to meet new regulations. The flush-fitting headlamps are of sealed-beam type and the recessed sidelamps are standard step well lights.



G.S.-type one-man operated bus for London Transport, showing arrangement of driver's seat

Deviation at Bramwith, Eastern Region

Work has begun on a deviation line more than half-a-mile in length, 50 ft. to the north of the existing Eastern Region line between Bramwith Goods Depot and Skellow Junction on the Grimsby-Wakefield line about six miles north-east of Doncaster.

The work, which will take about two years, includes forming embankments—the new portion of line will be about 9 ft. higher in places than the existing line—laying permanent way, extension of two underline bridges, and the construction and erection of a new culvert and new prototype bridges over the River Don and over the River Don Navigational Canal which will have all-welded steelwork with pre-stressed concrete deck slabs.

Approximately 60,000 tons of ballast filling will be brought from Scunthorpe to form the new embankments. A train load is being emptied every week-day by grab cranes and levelled by bulldozers as the work proceeds. This delivery of ballast will proceed for about twelve months. The Engineer's Department will have possession of one line during the whole period of the contract.

When the scheme is completed, the 99-year-old swing bridge over the canal will be dispensed with as the new bridge over the canal will have sufficient height to allow clearance for the passage of canal traffic. This will also enable trains to be accelerated, as at present a 10 m.p.h. speed restriction applies to the canal swing bridge. Traffic on the present line will be uninterrupted whilst the work is proceeding. The main contractors for the work will be the Cleveland Bridge & Engineering Co. Ltd., Darlington.

Rubber in Railways

A conference in Stockholm in September, discussed problems arising from the use of rubber in railway and tramway rolling stock and installations. Mr. W. R. Good, Michelin Tyre Co. Ltd., recalled that the first rubber-tyred railway vehicle went into operation in 1929 and that, by 1939, the number of Michelin rubber-tyred railway vehicles amounted to 140. Bearing capacity and life of the tyres has been greatly increased by steel wire reinforcement. Apart from the smooth running, one of the advantages claimed is the quicker acceleration and braking because of the much greater friction of the rubber tyres on the rails. The puncture of one or even several tyres does not mean that the vehicle must be taken out of service.

Monsieur H. Ruhlman reported on the experience with the rubber-tyred coach which has been in operation on the Paris Metro since August, 1951. There had been very little wear of rubber tyres even though these are also used for the horizontal wheels which keep the train securely on the concrete track. It is claimed that a general changeover to rubber-tyre operation would be economic because of the greater overall speed resulting from increased acceleration and deceleration; this would permit a ten per cent reduction in rolling stock and staff, and, because of a 15 per cent reduction in first cost, reduce maintenance cost and current consumption.

Messrs. O. Kekonius and E. Hedin gave details of other uses of rubber to improve insulation and elasticity on the Stockholm

underground railway and tramways. On the more specific application of rubber to improve the elasticity of the permanent way, details were given by Mr. N. Lundén of promising experiments carried out by Stockholm Tramways, and by Mr. S. E. Schäfer of other experiments on the Swedish State Railways which had not so far been successful. Monsieur P. Julien of the S.N.C.F. pointed out that the French railways are already using over 3,000,000 concrete sleepers with rubber pad supports and that the design is regarded as satisfactory.

Prestressed Concrete Tiebeams and Hangers for New French Bridge

In February, 1949, the locomotive of a Hirson-Paris express became derailed when passing Le Bourget Station, and knocked down a cast iron pillar of a road bridge. The bridge collapsed and crushed two other trains passing underneath. A new bridge had already been planned before the accident to enable the number of tracks to be increased from seven to nine to improve access to the adjacent marshalling yard. To avoid the danger of such an accident recurring, it was decided to construct it as an arch bridge with a single span of 74 m. (243 ft.). The accident was illustrated in our April 2, 1949, issue.

It was originally intended to construct the tiebeams as well as arches in reinforced concrete, but, because of the limited clearance between road and railway, it would have been necessary to use almost the entire available cross-section of the tiebeams for the steel reinforcement. After detailed examination, it was therefore decided to construct the tiebeams and even the hangers of the new arch bridge in prestressed concrete.

The concrete work was carried out on a working platform of steel girders, resting on the old piers and abutments and carrying the scaffolding and formwork for arches, tiebeams and hangers. Because of the height limitations, the bridge was cast at a level 1 m. above its final level. When completed, the bridge was first raised, by means of hydraulic jacks, by another 20 cm. to permit the removal of the scaffolding underneath, and then finally lowered on to its permanent supports.

Technical innovations, successfully tried out on this structure, included the concentration of the 48 tiebeam prestressing cables in four ducts of 12 cables each, the ducts being formed by tubes composed of prefabricated concrete boxes.

The bridge was designed and built by Sanrapt & Brice, in conjunction with the French National Railways.

INTERNATIONAL SLEEPING CAR SHARE TRUST LIMITED.—The audited accounts for the year ended May 31, 1953, of the International Sleeping Car Share Trust Limited show that besides the dividends received for the year 1952 on the trust's holding of Wagons-Lits shares, it has received the sum of £2,338, in settlement of the claim for expenses incurred since 1941 in protecting its Wagons-Lits holding after the shares had been seized in Paris. After charging administration expenses and providing £9,196 for taxation, the net profit is £12,335, to which is added the balance of unappropriated profit brought forward of £35,816, leaving a credit balance to be carried forward of £48,151.

Parliamentary Notes

Highland Transport

When Lord Malcolm Douglas-Hamilton (Inverness—C.) asked on November 18 what action the Minister of Transport had taken, or proposed, on the Inverness Chamber of Commerce Report on Highland Transport problems sent to him last May, Mr. Hugh Molson (Parliamentary Secretary to the Ministry of Transport & Civil Aviation) said that as regards railway charges, this was a matter for the interests concerned to take up with the B.T.C., and if necessary with the Transport Tribunal. Delegation of Regional authority was similarly a question primarily for the Commission in connection with its plans for reorganisation under Section 16 of the Transport Act, 1953. Special financial provision had been made for the improvement of Highland roads; any increase in the existing subsidy for steamer services in the Western Highlands would require the approval of the House.

Road Haulage Disposal Board Report

In reply to Mr. Ernest Davies (Enfield E.—Lab.), who asked whether the Minister of Transport & Civil Aviation had yet received the report for the first six months of the Road Haulage Disposal Board, Mr. Hugh Molson said on November 18 the Minister had not yet received the report.

Mr. Davies asked why the report had been delayed, as during the period no invitation was issued for tenders for purchase of vehicles. In view of the statement issued the previous day on tenders, he suggested that the vehicles would not be sold this year, the hope originally expressed by the Minister, or next year, and perhaps many of them never.

Mr. Molson said there had inevitably been delay in holding the first auction. The report would probably be presented to the House in the very near future.

Staff & Labour Matters

Engineers' Wage Claim

At a meeting in London on November 19 delegates of the 39 unions affiliated to the Confederation of Shipbuilding & Engineering Unions decided by a large majority to call a 24-hr. strike on December 2 in protest at the rejection of their claim for a 15 per cent increase in rates of pay. Earlier in the day C.S.E.U. representatives had heard the Shipbuilding Employers' Federation reject finally a parallel claim on behalf of shipbuilding workers.

At a meeting of the C.S.E.U. executive before the delegate conference, leaders of the A.E.U. reported the proposal of their own delegate conference that there should be a 24-hr. strike. The T.G.W.U. and the National Union of General & Municipal Workers opposed the suggested strike action but were overruled. Recommending the strike action to the delegate meeting afterwards, Mr. H. G. Brotherton, President of the C.S.E.U. said that "steps must be taken to impress on the employers how unwarranted is their attitude and that members are supporting the Confederation."

A proposal that the dispute be referred to a court of inquiry appointed by the Minister of Labour was made by the General Secretary of the Iron, Steel & Metal Dressers' Trade Society and supported by the General Workers' Unions, but it was not accepted.

Mr. Brotherton said after the meeting that the Minister of Labour would be

informed of the decision of the delegate conference and leaders of the Confederation would be prepared to discuss the dispute with the Minister or Officials of the Ministry if invited to do so.

Contracts & Tenders

An order has been placed with the English Electric Co. Ltd., for ten 750-h.p. main line diesel-electric locomotives for the Nigerian Railway.

The General Electric Co. Ltd., has received a contract for the installation of a new automatic train announcement system at Stratford Station, Eastern Region. Particulars are given in an article on page 610.

The following orders have been placed by the British Transport Commission:

Cambrian Wagon & Engineering Co. Ltd.: ten 40-ton armour plate wagons, type ARM-EL
Cravens Railway Carriage & Wagon Co. Ltd.: 1,500 steel containers

British Railways, North Eastern Region, have placed the following contracts:—

Turnerised Roofing Co. (Gt. Britain) Ltd., London, S.E.11: weatherproofing of roof over platforms Nos. 2 and 3, Huddersfield Station

Carter Horseley (Engrs.) Ltd., Newcastle, 2: demolition of down line viaduct, Ushaw Moor, Bridge No. 5, Dearness Valley Branch

British Railways, Western Region, have placed the following contracts:—

W. H. Streeter Limited, Hampton: reconstruction of the east end, etc., of Painting Shop, Old Oak Common

British Insulated Callender's Cables Limited, London, W.C.1: installation of cable brackets in the Severn Tunnel from the Sudbrook Shaft to the English end of the tunnel

Penarth Pontoon, Slipway & Ship Repairing Co. Ltd., Penarth Docks: work to be performed in connection with the annual overhaul of the ss. *Str. David*, 1953

Rowson, Drew & Clydesdale Limited, London, E.C.4: supply and erection of one electrically-driven slat conveyor at Gloucester Central Goods Shed

Permafence Limited, London, W.3: supply and erection of fences in the Wolverhampton District

Structural Waterproofers Limited, London, S.W.6: carrying out repairs to the roof of Cardiff East Dock Motive Power Depot

E. Turner & Sons Ltd., Cardiff: provision of extension to a warehouse at Cardiff (Roath) Goods Yard

W. Walkerdine Limited, London, W.10: construction of a turntable pit and alterations to engine pits at Old Oak Common

The Director-General, India Store Department, London, invites tenders for cast steel items, such as crossheads, wheel centres, etc. Details appear under Official Notices on page 615.

The Ministry of Railways (Railway Board), Government of India, is inviting tenders for the supply of twelve groups of machines. Complete details appear under Official Notices on page 615.

The Special Register Information Service, Export Services Branch, Board of Trade, reports that the Director General of the India Store Department in London has notified a call for tenders issued by the Director General of Supplies & Disposals, Government of India, for:—

800 buffer casings (BG) (for assembly Nos. WA-198, 199, 216, 217, 218, 219 and 221) to

IRS. Drg. No. W-392 alt. 7 and to I.R.S. Specn. No. M2/48. Class A, grade 2

The closing date for the receipt of tenders is 10 a.m. on December 4. Tenders should be submitted to the Director General of Supplies & Disposals, Shahjahan Road (Section SRI), New Delhi.

Forms of tender are only available for purchase in India from the Deputy Director General (Supplies), Directorate General of Supplies & Disposals, New Delhi; the Director Supplies & Disposals, Bombay or Calcutta; or the Deputy Director of Supplies & Disposals, Madras.

If the date for the receipt of tenders does not allow sufficient time to obtain tender forms from India, quotations may be submitted in letter form or by telegram as long as all essential particulars are given and provided tender forms are simultaneously applied for and returned duly completed as quickly as possible on the basis of advance quotations already submitted.

A copy of the tender form may be examined on application to the Railway Branch of the India Store Department, 32-44, Edgware Road, London, W.2. Drawings may be seen at the offices of Hodges Bennett & Co. Ltd., 59-60, Petty France, London, S.W.1, from whom copies may be purchased.

The Special Register Information Service, Export Services Branch, Board of Trade, reports that the Director General of the India Store Department in London has notified a call for tenders issued by the Director of Supplies & Disposals, Railways Stores Directorate, New Delhi, for:—

3,000 blocks, brake, engine, for "YB" and "YF" class locomotives
11,370 blocks, brake, engine, for "A," "B," "P," "F" and tank locomotives
5,000 blocks, brake, tender

The closing date for receipt of tenders is at 10 a.m. on December 8. Tenders should be addressed to the Director of Supplies & Disposals, Shahjahan Road (Section SRI), New Delhi, quoting ref. SRI/17067/D/11. A copy of the tender form may be examined at the office of the Director General, India Store Department, 32-44, Edgware Road, London, W.2, on application to the Railway Branch, and the drawings can be seen at the offices of Hodges, Bennett & Co. Ltd., 59-60, Petty France, London, S.W.1, from whom copies may be purchased.

Forms of tender are only available for purchase in India from the Deputy Director (Supplies), Directorate General of Supplies & Disposals, New Delhi, the Director of Supplies & Disposals, Bombay or Calcutta, or the Deputy Director of Supplies & Disposals, Madras. If the date for receipt of tenders does not allow sufficient time for tender forms to be obtained, quotations may be submitted on United Kingdom firm's own letter form or by telegram so long as essential particulars are given and provided that tender forms are applied for simultaneously and returned as quickly as possible on the basis of advance quotations already submitted.

The Special Register Information Service, Export Services Branch, Board of Trade, reports that the United Kingdom Trade Commissioner at Delhi has notified a call for tenders issued by the Directorate General of Supplies & Disposals, Government of India, for the supply of:—

60 injector, 5 mm., to B.N.R., L.W. Drg. No. IR152 to 154 and IR127 to 130 (DGI & S Nos. 739 to 741 and 730 to 733 respectively) and to I.R.S.S. No. N-6/49 class 11 and M. S/48 Class

11. Machined as per drawing complete and assembled

The closing date for receipt of tenders is 10 a.m. on December 10. Tenders should be addressed to the Director General of Supplies & Disposals, Shahjahan Road, New Delhi. The stores are required immediately for the District Controller of Stores, Eastern Railway, Kharipur, at Kharida. One copy of the specifications and conditions of tender, with the drawings mentioned above, is available for loan to United Kingdom firms, in order of receipt of application to the Branch at Lacon House, Theobalds Road, London, W.C.1.

The Special Register Information Service Exports Services Branch, Board of Trade, reports that the British Consulate General at Lourenço Marques has notified a call for tenders issued by the Directorate of Port, Railway and Transport Services, Lourenço Marques, for:—

Seven overhead travelling cranes, 30 tons

These cranes, electrically controlled, should be equipped with a single crab, with one hook for 30 tons. They should be built for a span of not more than 12.5 m. on a runner track situated 7.5 m. above the ground

Two cranes with two crabs, 25 tons each

These two cranes, electrically controlled, should be equipped with two crabs each, each crab having a double hook for 25 tons. The total load for each crane will therefore be 50 tons. They should be built to work on a span of not more than 19 m. on a runner track situated 9.20 m. above the ground

Two cranes with two crabs, 60 tons each

These cranes, electrically controlled, should be equipped with two crabs each, each crab having a hook for 60 tons. The total load for each crane will therefore be 120 tons. They should be built to work on a span of not more than 19 m. on a runner track situated 16 m. above the ground. The supply of these two 120-ton cranes will include, for each, the slings and crosspiece necessary for handling locomotives. The eleven overhead travelling cranes should be operated by a cabin slung on the lower portion of one of the ends of the cranes, arranged to permit good visibility of the loads handled. The exact measurements of the spans on which the cranes will have to work will be indicated at the time of ordering.

One turntable for 120 tons

The turntable should have a minimum diameter of 16 m. and be capable of supporting a load of 120 tons. It should be equipped with two double tracks, arranged at right angles, 4 m. apart between centre lines.

Method of drive

The overhead travelling cranes and the reversing turntable should be driven by electric motors, with insulation for tropical climates, fed by alternating current, three-phase, 220/380 volts, 50 cycles, supplied together with the cranes, as well as all the electrical equipment appropriate to them.

The Administration reserves the right to place a contract for the whole or part of the material which forms the subject of this call for tenders, to suit its own convenience.

The closing date for the receipt of tenders is December 28. A provisional deposit of Esc. 175,000\$00 must be made by the tenderers.

United Kingdom firms are reminded that they cannot submit tenders direct but only through firms established in Mozambique, whose names are registered with the Stores Department of the Treasury (Almoxarifado de Fazenda), Lourenço Marques. A list of local firms willing to represent United Kingdom firms and a copy of the conditions of tender with specifications (in Portuguese) are available for loan from the Branch.

Notes and News

Assistant Accountant Required.—Applications are invited for the post of assistant accountant, between 28 and 35 years of age, required by the Gwaqui La Paz Railway. See Official Notices on page 615.

Vacancy for Assistant Signal & Telegraph Engineer.—A vacancy exists for an assistant signal & telegraph engineer for service in the chief engineer's department of the Rhodesia Railways. See Official Notices on page 615.

Mechanical Engineers Required.—Applications are invited for the posts of senior technical assistant and locomotive draughtsman, between 30 and 35 years of age, required by a British railway operating in Bolivia. See Official Notices on page 615.

Assistant Engineers and Assistant Engineers (Capital Works) Required.—Applications are invited for the posts of assistant engineers and assistant engineers (capital works) required by the Nigerian Railway. See Official Notices on page 615.

Vacancies for Signal and Telegraph Mechanicians.—Applications are invited to fill vacancies in Northern and Southern Rhodesia for signal and telegraph mechanicians who have served a minimum of three years as signal and telegraph linemen and have had experience in the installation and maintenance of electrical and mechanical signalling and railway telecommunications. See Official Notices on page 615.

Railway Benevolent Institution.—At its meeting on November 18 the board of the Railway Benevolent Institution granted annuities to seven widows and fifteen members involving an additional sum of £371 13s. per annum. Fifty-four gratuities

were also granted amounting to £532 10s. to meet cases of immediate necessity. Grants made from the Casualty Fund during the month of October amounted to £565 12s.

Vacancy for Draughtsman.—Applications are invited from qualified draughtsmen, not exceeding 35 years of age, for the post of draughtsman (mechanical), South African Railways, on the establishment of the High Commissioner for the Union of South Africa in London. See Official Notices on page 615.

Boiler Inspector and Running Shed Foremen Required.—Applications are invited for the posts of boiler inspector and running shed foremen required by the Nigerian Government Railway, for one tour of 12 to 24 months in the first instance. See Official Notices on page 615.

Vacancies for Civil Engineers.—Vacancies exist for fully qualified civil engineers for service in the chief engineer's department of the Rhodesia Railways. Applicants should be preferably single men under 25 years of age, but married men not exceeding 30 years of age may apply. See Official Notices on page 615.

York Drama Group Production.—The Daphne du Maurier play "Rebecca" was given very successfully by the York Railway Institute Players in the Railway Institute Hall, York, on October 21, 22, and 23. Each of the twelve players was remarkably well cast, giving the play a sincerity of purpose which produced much applause from three large audiences. Visitors on the final night included Messrs. H. A. Short, Chief Regional Manager, North Eastern Region; A. Dean, Civil Engineer; B. X. Jessop, Assistant Chief Regional Manager; C. Cooper, Regional Staff Officer; A. F. Wigram, Signal & Telecommuni-

cations Engineer; and S. C. H. Fossert, Carriage & Wagon Works Manager. Other officers of the North Eastern Region attended performances on the two previous evenings.

Southern Railway Dramatic Society.—On Tuesday, December 8, at 6.45 p.m., the Southern Railway Dramatic Society, is giving a performance of "Pride and Prejudice," adapted from Jane Austen's novel by Helen Jerome, at the Scala Theatre, Charlotte Street, Tottenham Court Road, London, W.1.

British Railways Heavy Coal Traffic.—The tonnage of deep-mine and opencast coal carried by British Railways last weekend, 418,720, was the heaviest for eight months. The total for the week, 3,362,000 tons, was the heaviest for seven months. During the week ended November 14, 224,607 tons of iron and steel from the principal steel-works and 288,400 tons of iron ore were conveyed.

Record Sales and Profits for Acrow (Engineers) Limited.—Presiding at the recent annual meeting of Acrow (Engineers) Limited in the absence of the Chairman, Mr. W. A. de Vigier, who is abroad, Mr. A. V. Bauscher said that during the past year the company achieved an all-time record both in sales—value and volume—and profits. Profits for the year, he remarked, amounted to £371,937, after providing for all chargeable expenditure other than taxation. Once again exports had proved an important factor in sales, and despite the tremendous increase reported last year, the year under review showed a further increase of over 45 per cent on last year's export figure.

British Institute of Management Annual Conference.—Mr. Peter Thorneycroft, President of the Board of Trade, said at the recent British Institute of Management annual conference at Harrogate that fierce competition was coming not only from Germany and Japan, but from the U.S.A. The keys to success, he stated, lay in adoption of the most efficient methods, provision of better services, such as transport facilities to other industries, cutting of costs, the efficient use of skilled manpower. Britain possessed a wealth of skill and knowledge, but some men declined to give information for fear of their competitors at home; the danger today was from competitors abroad, and the exchange of information was needed on the widest possible scale.

Inadequacy of British Roads Discussed.—Mr. Alan Lennox-Boyd, Minister of Transport & Civil Aviation, has discussed with representatives of the Association of British Chambers of Commerce the terms of a memorandum previously submitted by the Association on the unsuitability and inadequacy of the nation's roads to meet the needs of modern industrial and commercial traffic. The deputation expressed the view that priorities should be determined on a national basis to ensure that the worst causes of congestion and delay to traffic on the roads were removed irrespective of location. They also pointed to the fact that since the war whereas housing, steel industry, coal mines, generation of electricity, and armaments have had priority in the allocation of labour and materials; roads had been relatively neglected. The Minister emphasised his concern at the problems of the roads, but made it clear that there was no short or easy solution. He undertook to consider proposals put

Diesel Train Working in Ireland



Dublin to Belfast non-stop "Enterprise" express passing Portadown Junction, Great Northern Railway Board, showing Armagh and Cavan line in centre and Londonderry line on right

OFFICIAL NOTICES

MINISTRY OF TRANSPORT AND CIVIL AVIATION
TRANSPORT ACT, 1947

THE Minister of Transport and Civil Aviation in accordance with the provisions of the Eighth Schedule to the Transport Act, 1947, hereby gives notice that he has prepared the draft of an Order embodying the scheme prepared and submitted to him by the British Transport Commission under Section 38 of the said Act as to the property, rights, powers and liabilities of the Railway Clearing House, and that he proposes to proceed with the making of the Order.

A copy of the draft Order may be inspected and copies thereof obtained, free of charge, at all reasonable hours on Mondays to Fridays in Room No. 30, at the Ministry of Transport and Civil Aviation, Berkeley Square House, London, W.1, between December 1, 1953, and January 10, 1954. Copies of the draft Order may also be inspected at all reasonable hours at Room F. L., the Railway Clearing House, 203, Eversholt Street, London, N.W.1.

Any person may within the period of forty days from December 1, 1953, make objections, in manner hereinafter provided, to the draft of the Order to the Secretary, Ministry of Transport and Civil Aviation, Berkeley Square House, London, W.1, quoting R 10/6/06.

Every objection to the draft of the Order shall be made in duplicate and shall comprise or there shall be submitted therewith a statement in writing setting out the specific grounds for any amendments, additions or modifications asked for, being amendments, additions or modifications to or of the scheme.

MARGARET B. A. CHURCHARD

An Assistant Secretary of the
Ministry of Transport & Civil Aviation
Berkeley Square House,
London, W.1
November 6, 1953.

BOILER INSPECTOR (M2C/30212/RA). RUNNING SHED FOREMEN (M2C/30208/RA) required by the NIGERIAN GOVERNMENT RAILWAY for one tour of 12/24 months in the first instance. Salary, etc., according to qualifications in the scale £750 rising to £1,035 a year, with prospect of pensionable employment or (b) £807 rising to £1,115 a year on temporary terms with gratuity of up to £150 a year. Outfit allowance £60. Free passages for the officer, and his wife. Assistance towards the cost of children's passages or grant of up to £150 annually for their maintenance in United Kingdom. Liberal leave on full salary. M2C/30212/RA. Candidates should have served an apprenticeship in a railway or locomotive builder's boiler shop and have had 7 years subsequent experience as a journey man, including at least 3 years in the running sheds. M2C/30208/RA. Candidates should have served an apprenticeship in a main locomotive workshop and have had at least 7 years subsequent experience in a running shed. They must be thoroughly acquainted with all branches of running shed fitting and with periodical examinations of locomotives. Write to the Crown Agents, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote reference number against the post for which application is made.

OFFICE OF THE HIGH COMMISSIONER FOR THE UNION OF SOUTH AFRICA. Vacancy for Draughtsmen. Applications are invited from qualified draughtsmen, age not exceeding 35 years, for the post of Draughtsman (Mechanical), South African Railways, on the establishment of the High Commissioner for the Union of South Africa in London. *Salary Scale:* £350-£25-£550 per annum, plus a temporary cost-of-living allowance which at present is £280 married and £100 single. 2. The duties of the post entail handling and checking of working drawings for all classes of railway mechanical equipment, the scrutiny of inspectors' reports and handling of technical correspondence. 3. Forms of application and further particulars are obtainable from the Staff Clerk, South Africa House, Trafalgar Square, London, W.C.2, to whom applications should be addressed to reach him not later than December 19, 1953.

N.E.R. HISTORY.—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell, C.B.E., Assistant General Manager, N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10s. 6d.—*The Railway Gazette*, 33, Tothill Street, London, S.W.1

Midland Region stations are also affected:—

Leicester Belgrave Road; Humberstone; Thurnby and Scraftopt; Hallaton; East Norton; Tilton; John O'Gaunt; and Melton Mowbray North. The following stations on the Eastern Region are also affected: Scalford; Long Clawson and Hose; Harby and Stathern; Barnstone; and Redmile.

Conservation of Fuel Resources.—Mr. F. M. H. Taylor, Managing Director, Thermocontrol Installations Limited, discussing immediate and future fuel and

RHODESIA RAILWAYS. VACANCIES FOR CIVIL ENGINEERS. Vacancies exist for fully qualified Civil Engineers for service in the Chief Engineer's Department of the Rhodesia Railways. Preferably applicants should be single men under the age of 25 years but married men not exceeding 30 years of age may apply. A Degree in Civil Engineering and/or Corporate Membership of the Institution of Civil Engineers is essential. The grades of Junior and Assistant Engineer have salary scales between the limit of £560 and £1,460 per annum, with incremental notches of £40 per annum, but the commencing salary would be determined in accordance with age and experience. The vacancies are for appointment to the Temporary Staff in the first instance, but transfer to the Permanent Staff may be made either to fill vacancies or on the recommendation of the Chief Engineer. Vacancies may occur later on for members of the Permanent Staff for the grade of District Engineer by selection within the scale £1,350 to £1,750 per annum. All salaries are enhanced by a variable Cost of Living Allowance, which at present is 20 per cent. on basic rates. Full particulars may be obtained from the London Agent, Rhodesia Railways, 241, Salisbury House, London Wall, London, E.C.2. Applications should reach the London Agent by December 11, 1953.

RHODESIA RAILWAYS. VACANCY FOR ASSISTANT SIGNAL AND TELEGRAPH ENGINEER. A vacancy exists for an Assistant Signal and Telegraph Engineer for service in the Chief Engineer's Department of the Rhodesia Railways. Single men between the ages of 26 and 30 are preferred, but married men not over 30 years of age may apply. It is desirable that applicants should have served with the British Railways in the Signal and Telegraph Communications Department and are Associate Members of the Institute of Railway Signal Engineers. It is essential that applicants have experience in the installation and maintenance of electrical and mechanical signalling and telecommunication equipment. The grades of Junior and Assistant Engineer have salary scales between the limits of £560 and £1,460 per annum with incremental notches of £40 per annum and the commencing salary would be determined in accordance with age and experience. The vacancy is for appointment to the temporary staff in the first instance but transfer to the Permanent Staff may be made to fill a vacancy and on the recommendation of the Chief Engineer. All salaries are enhanced by a variable Cost of Living Allowance which at present is 20 per cent. on basic rates. Full particulars may be obtained from the London Agent, Rhodesia Railways, 241, Salisbury House, London Wall, London, E.C.2.

RHODESIA RAILWAYS. VACANCIES FOR SIGNAL AND TELEGRAPH MECHANICIANS. Applications are invited to fill vacancies in Northern and Southern Rhodesia for Signal and Telegraph Mechanicians who have served a minimum of three years as Signal and Telegraph Linemen and have had experience in the installation and maintenance of electrical and mechanical signalling and Railway tele-communications. The rates of pay for a 44 hour—54 day week—are as follows:—Commencing, £60 16s. 0d. per month; second year, £61 13s. 0d. per month; third year, £62 9s. 0d. per month; fourth year, £63 6s. 0d. per month; fifth year, £64 3s. 0d. per month; sixth year, £65 1s. 0d. per month; seventh year, £66 3s. 0d. per month. In addition to the above, a variable cost of living allowance (at present 20 per cent. of basic wage) is payable together with other allowances and privileges. Further particulars may be obtained from the London Agent, Rhodesia Railways, 241, Salisbury House, London Wall, London, E.C.2.

GUAQUI LA PAZ RAILWAY. Assistant accountant. Qualifications: Man who has passed intermediate examination of recognised accountancy body preferred. Knowledge of railway accounts an advantage. Preferably single between 28/35 years of age. Apply SECRETARY OF THE PERUVIAN CORPORATION, 144, Leadenhall Street, London, E.C.3.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is exempted from the provisions of the Notification of Vacancies Order, 1952.

DRAUGHTSMEN, junior, with some experience in the preparation of engineering drawings for reproduction. Good lettering essential. London area. Five-day week. Write, stating age, experience and salary required, to Box 2, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

HER MAJESTY'S COLONIAL SERVICE ASSISTANT ENGINEERS and Assistant Engineers (Capital Works), Nigerian Railway. Appointment on probation for permanent and pensionable establishment, or on contract/gratuity terms. Basic salary £650-£40-£1,290 for permanent appointment; £175-£44-£1,419 on contract. Expatriation pay, varying according to salary from £180 to £300 p.a. also payable. Officers appointed on contract/gratuity terms also receive substantial gratuity on satisfactory completion of contract. Candidates must hold a recognised university degree or diploma in civil engineering carrying exemption from Sections I and II of the A.M.I.C.E. examinations plus 2 years approved practical experience, preferably in railway engineering or be A.M.I.C.E. Duties would include taking charge of Engineering Sections and Work on bridges, general reinforced concrete construction, etc. Further details on application. Apply in writing to the Director of Recruitment, Colonial Office, Great Smith Street, London, S.W.1, giving briefly age, qualifications and experience. Mention the reference number CDE 110/14/06-09.

THE Director General, India Store Department, 32/44 Edgware Road, London W.2, invites tenders for the supply of: Cast steel items such as—Cross Heads, Wheel Centres, Frame Cradles, Frame Stays, Hind and Back Truck Axle Boxes, Tender Bogies, etc., etc., in sizeable quantities. Forms of tender, which are returnable by Friday, January 8, 1954, may be purchased from this Office upon payment of a fee of 10s. Reference Home No. 206/53 must be quoted in all applications.

GOVERNMENT OF INDIA. MINISTRY OF RAILWAYS (RAILWAY BOARD). Tenders are invited for the supply of machines of under-mentioned groups: 1. Vertical and horizontal lathes and turret lathes. 2. Vertical and horizontal drilling machines. 3. Milling machines. 4. Planing, shaping and slotting machines. 5. Grinding machines. 6. Material testing machines. 7. Guillotine shears. 8. Sheet and section straightening machines. 9. Press brakes. 10. Eccentric and Hydr. presses. 11. Electric welding machines. 12. Bending machines. 13. Oxy-acetylene cutting machines. 14. Material cutting and filing machines. 15. Forging furnaces. 16. Forging machines. 17. Pipe bending machines and pipe threading. 18. Anodising plant, nickel and chromium plating plant. 19. Grit blasting plant. 20. Wood working machines. Tender forms, as well as "Instructions to Tenderers" and "Conditions of Contract" may be purchased from Messrs. SWISS CAR & ELEVATOR MANUFACTURING CORPORATION, LTD., SCHLIEREN-ZURICH (Switzerland) at a ground rate of Sfr. 5.—and an additional rate of Sfr. 10.—per machine group, payable to the Credit Suisse Zurich (Switzerland) for account Swiss Car and Elevator Manufacturing Co., Ltd., Schlieren-Zurich. All tenders with enclosed specifications, catalogues, drawings, etc., must reach the office of Messrs. Swiss Car & Elevator Corporation, Ltd., Schlieren-Zurich, Switzerland, not later than January 20, 1954.

MECHANICAL ENGINEERS. Required by British Railway operating in Bolivia: (a) Senior Technical Assistant, (b) Locomotive Draughtsman. Candidates, preferably A.M.I.Mech.E. or B.Sc. (Eng.), must have good experience in drawing office and workshops of Locomotive Builders or Railway. Age 30/35, preferably married but no suitable educational facilities for children. Knowledge Spanish an advantage but not essential. Commencing salary £850 p.a., plus quarters, passages, allowances, etc. Write Box 7192, c/o Charles Barker & Sons, Ltd., 31, Budge Row, London, E.C.4.

forward by the Association, and hoped that there was room for some modest optimism.

Market Harborough-Nottingham Victoria and Leicester Belgrave Road-Grantham Line Closures.—As announced in our November 13 issue, the passenger service between Market Harborough and Nottingham Victoria and between Leicester Belgrave Road and Grantham will be withdrawn on December 7. Great Dalby, Lowesby and Ingarsby stations will close for all traffic. The following London

power economy measures in his paper read before the Institute of Fuel on November 24, said that British Railways had in hand a large-scale programme for the dieselisation of shunting services which would be stepped up considerably in 1953-57. Capital resources, however, limited the extent to which dieselisation and electrification could be carried out, however one might agree with the principle. The considerable increase in the use of diesel traction not only in the U.S.A. but also in Europe and the Commonwealth suggested that consideration of the

practicability and economic aspects of further replacement of steam locomotives to save solid fuel should receive high priority.

Closing of London Midland Region Stations.—The following London Midland Region stations will be permanently closed on and from December 7:—

Kirkby Thore (between Appleby and Penrith); Temple Sowerby (between Appleby and Penrith); and Wotton (between Calvert and Princes Risborough). Temple Sowerby will be closed for passengers, the other two stations for passengers, parcels, passenger train merchandise and freight.

British Insulated Callender's Cables Limited: Change of Address.—British Insulated Callender's Cables Limited announces that the address of its Bristol branch is now 7-9 Barton Street, Bristol. The telephone number, Bristol 23453-4, is unchanged.

Forthcoming Meetings

November 28 (Sat.) to December 19 (Sat.).

—British Railways Exhibition at the Maxwell Art Gallery, Peterborough, to be opened by Sir John Benstead, Deputy Chairman, British Transport Commission.

November 30 (Mon.).—Institute of Transport, Berks, Bucks & Oxon Section, in the Board Room, 32 Thorn Street, Reading, at 7 p.m. Paper on "The possibilities of passenger transport by rail," by Mr. L. W. Ibbotson.

December 1 (Tue.).—British Railways, Southern Region, Lecture & Debating Society, at Chapter House, St. Thomas Street, London Bridge, S.E.1, at 5.45 for 6 p.m. Paper on "Problems and prospects in British air transport," illustrated by lantern slides, by Mr. Peter P. Masefield, Chief Executive, B.E.A.

December 1 (Tue.).—Permanent Way Institution, Leeds and Bradford Section, in the British Railways Social & Recreation Club, Ellis Court, Leeds City North Station, at 7 p.m. Annual General Meeting.

December 1 (Tue.).—Institute of Transport, North Western Section, Manchester, at the Chartered Accountants' Hall, at 6.15 p.m. Paper on "Railway operating," by Mr. S. O. Screen.

December 2 (Wed.).—Railway Students' Association, at the London Transport (South Kensington) Club, at 6.15 for 7 p.m. Annual dinner and dance.

December 2 (Wed.).—British Steel Founders' Association, at Claridges Hotel, Brook Street, W.1. Banquet.

December 3 (Thu.).—Institute of Transport, Merseyside Section, at the Chamber of Commerce, Liverpool, at 6.30 p.m. Paper on "British railway operating methods and some possible developments," by Mr. S. E. Parkhouse.

December 4 (Fri.).—Railway Club, at 57, Fetter Lane, London, E.C.4, at 7 p.m. Paper on "The Leicester and Swannington Railway," by Mr. C. R. Clinker.

December 4 (Fri.).—Institute of Transport, Western Section, at the Docks Office, Bristol, at 1.15 p.m. Paper on "The transport needs of agriculture," by Mr. G. A. Baxter, National Farmers' Union.

December 4 (Fri.).—Institution of Mechanical Engineers at Storey's Gate, St. James's Park, London, S.W.1, at 5.30 p.m. Two papers:

"Comparative high-temperature properties of British and American Steels," by Mr. W. E. Bardgett and Dr. C. L. Clark, and "A critical examination of procedures used in Britain and the United States to determine creep stresses for the design of power plant for long life at high temperatures," by Mr. R. W. Bailey.

December 4 (Fri.).—Stephenson Locomotive Society, at 32, Russell Road, London, W.14, at 6.45 p.m. Illustrated talk, "By Tummel & Loch Rannoch (West Highland Line)," by Mr. A. G. Dunbar.

December 5 (Sat.).—Stephenson Locomotive Society, Sheffield Centre, at the Y.M.C.A., Fargate, at 6.30 p.m. Paper on "Accident reports critically reviewed," by Dr. W. A. Tuplin.

December 7 (Mon.).—Institute of Transport, Metropolitan Section, at 80,

Portland Place, London, W.1, at 5.30 for 6 p.m. Annual General Meeting, followed by paper on "Automatic train control and other safety measures," by Mr. L. W. Hatley.

December 8 (Tue.).—South Wales & Monmouthshire Railways & Docks Lecture & Debating Society, in the Angel Hotel, Westgate Street, Cardiff, at 6.30 p.m. Paper on "Production and development in the aluminium industry," accompanied by films, by Mr. E. S. Anderson, General Manager, Northern Aluminium Co. Ltd., Rogerstone.

December 8 (Tue.).—Institute of Transport, Metropolitan Student & Graduate Society, at 80, Portland Place, London, W.1, at 5.30 for 6 p.m. Paper on "London fares—a basic assumption reconsidered," by Mr. C. McKenzie Cray.

Railway Stock Market

The renewed upward trend in stock markets, which carried industrial shares and British Funds higher again last week, has been followed by a fair amount of profit-taking now sentiment has been influenced by the warning of the Chancellor of the Exchequer that big efforts in export markets are imperative if the improvement in the country's gold and dollar reserves is to be held. Sentiment was also affected by the setback in the recently-issued United Steel shares, which, at the time of going to press are 3d. discount. These shares, which were issued at 25s. are now only 5s. paid up, and as the next instalment of 10s. is due next month there may be a fair amount of selling by those who took up the shares purely as a short-term speculation.

There seems little doubt that in view of the yield of almost 7½ per cent, United Steel shares will in due course go to a good premium, but much depends on the terms of the next steel issue. There have been reports that it will be made in December, but if this is so, and United Steel shares remain at a discount, the next steel issue would presumably have to be offered at a price showing a slightly higher yield than the £7 4s. given by United Steel at their issue price of 25s. The upward trend in dividend payments has continued, but the recent big and widespread advance in share values had probably been carried too far, because all companies cannot be expected to raise their dividends.

Foreign rails have been quieter this week with the general trend, though there was rather better demand for Manila Railway, issues with the "A" debentures changing hands around 86½ and the preference shares around 9s. 3d. If as is expected, there is in the next few months a settlement in respect of the service of the Manila Railroad bonds held by the company, its debentures and probably the preference shares as well, would be worth substantially more than their current prices. Hence they are being favoured on their scope for capital appreciation if all goes well in due course.

United of Havana stocks were quieter, awaiting further news from Cuba. Both the 4 per cent "A" and "B" stocks were 95½, the 5 per cent second income stock 39½ and the consolidated stock 6½.

Antofagasta ordinary stock changed hands around 8½, while the preference eased to 43, and the 5 per cent Bolivia debentures were dealt in around 71.

Brazil Railway gold bonds marked 6½, and Guayaquil & Quito first bonds 40½. Taltal Railway shares transferred at

14s. 3d. and Nitrate Rails shares were 21s. 3d.

Among Indian stocks, Barsi remained active and moved higher to 124 in response to payout estimates.

Dorada ordinary stock continued to attract some attention and showed business up to 60; the 6 per cent debentures were quoted at 90. Costa Rica ordinary remained at 11 and the 6½ per cent second debentures were quoted at 52½. Paraguay Central ordinary stock remained at 24, while International Railways of Central America no par shares have changed hands down to \$12½.

Canadian Pacifics have been a little easier at \$41½; the 4 per cent preference stock was £70½ and the 4 per cent debentures £84½xd. White Pass no par value shares at \$29½ have lost part of an earlier rise; the convertible debentures were £104. San Paulo ordinary units showed a number of dealings around 5s. 3d.

Shares of road transport companies maintained a firm front with Southdown 30s. 6d., Lancashire Transport 52s. and West Riding 27s. 3d. "ex" the bonus. B.E.T. deferred units remained in favour on higher dividend estimates and showed a further rise to 36s. 6d.

As was to be expected, the general trend of markets and the coming token strike by engineers to press their wage claims affected sentiment as to engineering and kindred shares. Moreover the lower earnings recently announced by Tube Investments and J. Brockhouse have emphasised that profit margins are narrowing. An exception in engineering shares has been strength of Cammell Laird 5s. shares, which advanced to 15s. on suggestions that the company's proposed centralisation plan and modernisation of its articles may foreshadow a special payout for shareholders in the future. Vickers eased to 51s. 6d. and Guest Keen at 51s. reflected a fair amount of profit-taking following their recent rise. British Aluminium at 37s. 6d. lost part of their recent rise, as did T. W. Ward at 81s. 9d. and Ruston & Hornsby at 42s. 6d. Tube Investments were 60s. 3d. and Babcock & Wilcox 47s.

The shares of locomotive builders and engineers have been generally steady, with Beyer Peacock 30s. 6d., Charles Roberts 5s. shares 18s., Hurst Nelson 41s. 9d., North British Locomotive 13s. 3d. and Birmingham Carriage 31s. 3d. Vulcan Foundry were 24s. 3d., Gloucester Wagon 10s. shares 16s. while Wagon Repairs 5s. shares were 15s. 1½d. and G. D. Peters 5s. shares 21s. 10½d.